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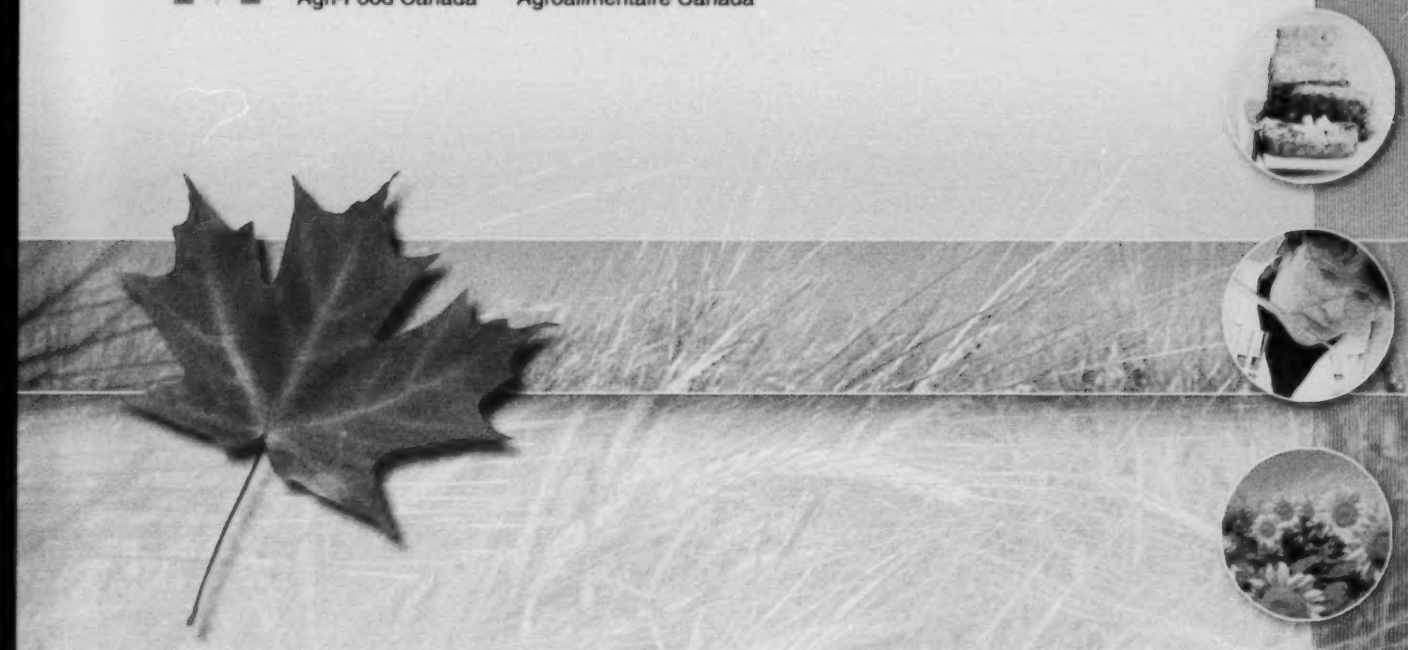

An Overview of the Canadian Agriculture and Agri-Food System

2011

Canada

An Overview of the Canadian Agriculture and Agri-Food System

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This publication comprises data and analysis provided by all three divisions of the Research and Analysis Directorate as well as contributions from other Divisions and Branches of Agriculture and Agri-Food Canada.

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Table of Contents

Foreword xi

Highlights xiii

Section A

Special Feature 1

A1. Young Farmer Enterprises 3

Section B

The Agriculture and Agri-Food System and the Canadian Economy 15

B1. GDP and Employment 17

B2. International Trade 23

B3. R&D Investments in Primary Agriculture and Food Processing 35

B4. Productivity Growth 43

Section C

Components of the Agriculture and Agri-Food System 51

C1. Consumers 53

C2. Food Distribution (Retail/Wholesale and Foodservice) 63

C3. Food and Beverage Processing 71

C4. Primary Agriculture 89

C5. Inputs to Primary Agriculture 109

C6. Natural Resource Use and Environmental Impacts 117

Section D

Government and the Agriculture and Agri-Food Sector 127

D1. Government Expenditures 129

D2. Producer Support Estimate and Agricultural Policies in Other Countries 135

Acronyms/Initialisms 139

Glossary 141

The Canadian Agriculture and Agri-Food System's Components 141

Farm Definitions 143

Farm Income Definitions 144

Trade Categories 146

Government Support Categories 147

Government Support Measures 148

Economic and Statistical Terminology 148

Environmental Terminology 150

Units of Measure 151

Data Sources and References 153

List of Charts

Section A – Special Feature

A1: Young Farmer Enterprises 3

A1.1 Distribution of Farms by Farm Group, 2008 4
A1.2 Average Number of Years of Farming Experience by Age of Oldest Operator, 2008 4
A1.3 Number and Share of YFEs by Farm Type, 2008 5
A1.4 Distribution of YFEs and All Farms by Farm Type, 2008 5
A1.5 Number and Share of YFEs by Revenue Class, 2008 6
A1.6 Number and Share of YFEs by Province, 2008 6
A1.7 Average Area of Land Owned vs. Rented, 2008 7
A1.8 Gross Revenue per Dollar of Farm Assets by Farm Type, 2008 8
A1.9 Gross Revenue per Dollar of Farm Assets by Revenue Class, 2008 8
A1.10 Profit Margin by Farm Type, 2008 9
A1.11 Profit Margin by Revenue Class, 2008 9
A1.12 Sources of Farm Family Income, 2008 10
A1.13 Debt to Asset Ratio by Farm Type, 2008 11
A1.14 Interest Expense as a Percent of Gross Revenue by Farm Type, 2008 11
A1.15 Average Net Worth by Farm Type, 2008 12
A1.16 Average Net Worth by Revenue Class, 2008 12

Section B – The Agriculture and Agri-Food System and the Canadian Economy

B1: GDP and Employment 17

B1.1 Agriculture and Agri-Food System's Contribution to GDP, 2009 18
B1.2 Agriculture and Agri-Food System's Contribution to GDP, 1997-2009 18
B1.3 Agriculture and Agri-Food System's Contribution to Employment, 2009 19
B1.4 Agriculture and Agri-Food System's Contribution to Employment, 1997-2009 19
B1.5 Agriculture and Food Processing's Contribution to Provincial GDP, 2009 20
B1.6 Provincial Contribution to Canadian Agriculture and Food Processing GDP, 2009 20
B1.7 Agriculture and Agri-Food System's Share of Provincial Employment, 2009 21
B1.8 Provincial Contribution to Canadian Agriculture and Food Processing Employment, 2009 21

B2: International Trade 23

B2.1 World Agriculture and Agri-Food Export Share by Country of Origin, 2009 24
B2.2 World Agriculture and Agri-Food Import Share by Country of Destination, 2009 24
B2.3 Destinations of Canadian Agriculture and Agri-Food Exports, 2009 25
B2.4 Origins of Canadian Agriculture and Agri-Food Imports, 2009 25
B2.5 Canadian Exports of Primary and Processed Agriculture and Agri-Food Products, 1997-2009 26
B2.6 Canadian Imports of Primary and Processed Agriculture and Agri-Food Products, 1997-2009 26
B2.7 Commodity Composition of Canadian Agriculture and Agri-Food Export Sales, 2009 27
B2.8 Commodity Composition of Canadian Agriculture and Agri-Food Import Sales, 2009 27
B2.9 Canadian Grains and Grain Product Exports by Country of Destination, 2009 28

B2.10 Canadian Grains and Grain Product Export Price and Volume Indexes, 1988-2009 28
B2.11 Canadian Oilseeds and Oilseed Product Exports by Country of Destination, 2009 29
B2.12 Canadian Oilseeds and Oilseed Product Export Price and Volume Indexes, 1988-2009 29
B2.13 Canadian Live Animals, Red Meats and Other Animal Product Exports by Country of Destination, 2009 30
B2.14 Canadian Live Animals, Red Meats and Other Animal Product Export Price and Volume Indexes, 1988-2009 30
B2.15 Canadian Fruits, Vegetables and Their Products Imports by Country of Origin, 2009 31
B2.16 Canadian Fruits, Vegetables and Their Products Import Price and Volume Indexes, 1988-2009 31
B2.17 Canadian Beverage Imports by Country of Origin, 2009 32
B2.18 Canadian Beverage Import Price and Volume Indexes, 1988-2009 32
B2.19 Canadian Grains and Grain Product Imports by Country of Origin, 2009 33
B2.20 Canadian Grains and Grain Product Import Price and Volume Indexes, 1988-2009 33

B3: R&D Investments in Primary Agriculture and Food Processing **35**
B3.1 Global Public Agricultural Research Expenditures by Region, 1976-2000 36
B3.2 World Crop Yields, 1961-2008 36
B3.3 Government Research Expenditures on Agriculture and Agri-Food, 1990-91 to 2009-10 37
B3.4 Public R&D Spending to Support the Agriculture and Agri-Food Sector as a Share of Adjusted Value of Production, 1986-2009 37
B3.5 Real Private Sector R&D in Primary Agriculture, 1980-2009 38
B3.6 Saskatchewan Pulse Growers R&D Expenditures and Check-Offs, 1984-2008 38
B3.7 Index Adjusted Wheat Yields, 1972-2006 39
B3.8 Internal Rates of Return to Canadian R&D in Agriculture, Various Years 39
B3.9 Canola Production in Canada, 1980-2009 40
B3.10 Pulse Production in Canada, 1990-2009 40
B3.11 Real Private Sector R&D Expenditures in Food Processing, 1980-2009 41
B3.12 R&D Activities by Source, 2005-2007 41
B3.13 Food and Beverage Industry R&D Expenditures as a Share of Value-Added, 1994-2005 42

B4: Productivity Growth **43**
B4.1 Gross Output Quantity Indexes for Primary Agriculture in Canada and the U.S., 1961-2005 44
B4.2 Input Quantity Indexes for Primary Agriculture in Canada and the U.S., 1961-2005 44
B4.3 TFP Indexes for Primary Agriculture in Canada and the U.S., 1961-2005 45
B4.4 Average Annual Contributions of Input and TFP Growth to Gross Output Growth in Canadian and U.S. Primary Agriculture, 1961-2005 45
B4.5 Gross Output Quantity Indexes for Live Animals and Their Products in Canada and the U.S., 1961-2005 46
B4.6 Gross Output Quantity Indexes for Crops in Canada and the U.S., 1961-2005 46
B4.7 Input Quantity Indexes for Energy, Materials and Services in Canada and the U.S., 1961-2005 47
B4.8 Input Quantity Indexes for Hired Labour in Canada and the U.S., 1961-2005 47
B4.9 TFP Indexes for the Canadian and U.S. Food, Beverage and Tobacco Industries, 1987-2006 48
B4.10 TFP Indexes for the Canadian Food, Beverage and Tobacco and Total Manufacturing Industries, 1987-2006 48
B4.11 Average Annual Contributions of Input and TFP Growth to Gross Output Growth in the Canadian and U.S. Food, Beverage and Tobacco Industries, 1988-2006 49

Section C – Components of the Agriculture and Agri-Food System

C1: Consumers **53**
C1.1 Distribution of Personal Expenditures on Goods, 2009 54
C1.2 Distribution of Personal Expenditures on Services, 2009 55
C1.3 Real Per Capita Disposable Income, 1981-2009 55
C1.4 Real Personal Expenditures on Food, 1981-2009 56

C1.5 Per Capita Expenditures on Food as a Share of Total Personal Expenditures, 1981-2009 56
C1.6 Share of Household Food Expenditures by Income Quintile in Canada and U.S., 2008 57
C1.7 Share of Household Expenditures on Food and Non-Alcoholic Beverages in Selected OECD Countries, 2008 57
C1.8 Consumer Price Indices (CPI) for Food and All Items, 1982-2009 58
C1.9 Canadian Retail Food Price Inflation by Category, 2008 and 2009 58
C1.10 Per Capita Consumption of Dairy Products, Fruits and Vegetables and Fats and Oils, 1990-2009 59
C1.11 Per Capita Consumption of Beef, Pork and Poultry, 1990-2009 59
C1.12 Percentage Responding "Very or Somewhat Confident" in the Canadian Food System in Managing the Following Issues, 2010 60
C1.13 Percentage Responding "Very or Somewhat Confident" in the Canadian Food System in Managing the Following Food Safety Issues, 2004, 2006 and 2010 60
C1.14 Percentage Responding "Always or Often Look" for the Following Food Attributes When Grocery Shopping or Dining Away from Home, 2010 61
C1.15 Percentage (from the Respondents "Who Rarely/Never Look" for Organic Products) Responding the Main Reason for not Buying Organic Food Products, 2010 61
C1.16 Percentage (from the Respondents "Who Often/Always/Sometimes Look" for Locally-Produced Food) Responding "the Most Important Benefit" of Locally-Produced Foods, 2010 62
C1.17 Percentage (from the Respondents "Who Often/Always/Sometimes Look" for Locally-Produced Food) Responding "When Grocery Shopping, I am Willing to Pay More for Products that are Locally-Produced", 2010 62

C2: Food Distribution (Retail/Wholesale and Foodservice) ***63***

C2.1 Number of Canadian Food Stores and Average Sales, 1990-2009 64
C2.2 Share of Canadian Food Store Sales Chains vs. Independents by Region, 2009 64
C2.3 Market Share of Top Four Retailers in Selected Countries, 2009 65
C2.4 Average Profit Margin Ratio for Food and Beverage Retailers, 1999-2009 65
C2.5 Food and Beverage Sales by Food Retail Channel, 1999 vs. 2009 66
C2.6 Private Label Share of Grocery Sales by Department, 2009 66
C2.7 Commercial Foodservice Sales and Number of Establishments, 1998-2009 67
C2.8 Commercial Restaurant Bankruptcies, 1991-2009 67
C2.9 Foodservice Market Share Chains vs. Independents, 2009 68
C2.10 Market Share by Foodservice Category, 2009 69
C2.11 Profit Margins for Foodservice and Drinking Establishments, 1999-2008 69
C2.12 Institutional Foodservice Market, 2008 70

C3: Food and Beverage Processing ***71***

C3.1 Food Processing Input Composition and Output Disposition, 2006 72
C3.2 Distribution of Total Manufacturing GDP by Sector, 2009 73
C3.3 Distribution of Total Manufacturing Employment by Sector, 2009 73
C3.4 Real Value of Food and Beverage Manufacturing Shipments, 1992-2009 74
C3.5 Average Annual Growth in Shipments for Food and Beverage Processing Sub-Industries, 2004-08 and 2009 74
C3.6 Distribution of Food Processing Shipments and Number of Establishments by Employment Size, 2008 75
C3.7 Concentration Ratio (CR4) in the Food Processing Industry, 2008 75
C3.8 Food and Beverage Processing Export Intensities by Sub-Industry, 2009 76
C3.9 Food and Beverage Processing Import Intensities by Sub-Industry, 2009 76
C3.10 Sub-Industry Exports as a Share of Total Food and Beverage Processing Exports, 2009 77
C3.11 Destination of Meat Processing Exports, 2009 77
C3.12 Destination of Grain and Oilseed Milling Industry Exports, 2009 78
C3.13 Destination of Seafood Industry Exports, 2009 78
C3.14 Variable Input Costs in Food Processing, 2008 79
C3.15 Input Price Indexes, Food Processing Industry, 1997-2006 79
C3.16 Average Weekly Earnings in Food and Beverage Processing and Total Manufacturing, 1991-2009 80
C3.17 Investment in Capital Stock in Food Processing Industry, 1990-2009 81

C3.18 Capital Stock in Food Processing, 1961-2009 81
C3.19 Profit Margin Ratio in Food and Total Manufacturing, 1999-2009 82
C3.20 Debt to Equity Ratio in Food and Total Manufacturing, 1999-2009 82
C3.21 Percentage of Business Units Which Innovated During the Years, 2005-2007 83
C3.22 Extent of Innovation in Food Manufacturing, 2005-2007 83
C3.23 Business Units Acquiring or Integrating Advanced Technologies by Method, 2005-2007 84
C3.24 Effects of the Adoption of Advanced Technologies in Food Manufacturing (Business Units that use Advanced Technologies), 2005-2007 85
C3.25 Stock of Inward FDI in Food Processing by Country of Origin, 2000-2009 86
C3.26 Stock of FDI in Beverage and Tobacco Processing by Country of Origin, 2000-2009 86
C3.27 Stock of Outward FDI in Food Processing by Country of Destination, 2000-2009 87

C4: Primary Agriculture ***89***

C4.1 Disposition of the Value of Agricultural Production, 2006 90
C4.2 Number and Size of Farms in Canada, 1941-2006 91
C4.3 Distribution of Farms by Province, 2006 91
C4.4 Top Commodities by Province and Territory 92
C4.5 Market Receipts by Commodity Share, 1990 and 2009 93
C4.6 Regional Market Receipts by Commodity Share, 2009 93
C4.7 Canada Corn, Wheat and Soybean Prices, 1982-2009 94
C4.8 Cattle Price Cycle, 1980-2009 94
C4.9 Market Receipts by Commodity, 2000-2009 95
C4.10 Regional Market Receipts Relative to Five-Year Average, 2009 95
C4.11 Farm Cash Receipts, Net Cash Income and Net Operating Expenses, 1990-2009 96
C4.12 Realized Net Income and Direct Payments, 1990-2009 96
C4.13 Net Value-Added in Agriculture, 1991-2009 97
C4.14 Distribution of Net Value-Added in Agriculture, 2009 97
C4.15 Distribution of Farms and Operating Revenues by Revenue Class, 2008 98
C4.16 Distribution of Total Operating Revenues by Revenue Class, 1993-2008 98
C4.17 Average Net Operating Income by Revenue Class, 2008 99
C4.18 Average Net Operating Income by Province, 2008 99
C4.19 Average Net Operating Income by Farm Type, 2008 100
C4.20 Average Net Operating Income by Farm Type, 1995-2008 100
C4.21 Average Income of Farm Families by Source of Income, Unincorporated Farms, 2007 101
C4.22 Average Income of Farm Families By Source of Income, Unincorporated Farms, 2004-2007 101
C4.23 Average Farm Family Income by Farm Type, 2007 102
C4.24 Average Farm Family Income by Typology, 2007 103
C4.25 Definition of Farm Typology 103
C4.26 Family Income of All Farm-Rural-Urban Non-Farm Families, 2002-2006 104
C4.27 Median After Tax Farm-Rural-Urban Non-Farm Family Income, 1992-1996, 1997-2001 and 2002-2006 104
C4.28 Before Tax Family Income by Source, Farm-Rural-Urban Non-Farm Families, 2002-2006 105
C4.29 Average After Tax Family Income by Quintile of Family Income, 2002-2006 105
C4.30 Average Total Net Worth by Farm Type, 1995-2008 106
C4.31 Average Farm Total Net Worth by Province, 2006-2008 106
C4.32 Average Assets, Liabilities and Net Worth by Farm Type, 2008 107
C4.33 Average Quota Value of Supply-Managed Farms, 1997-2008 107
C4.34 Debt to Asset Ratios for All Farms, 1995-2008 108
C4.35 Debt to Asset Ratios by Farm Type, 2008 108

C5: Inputs to Primary Agriculture ***109***

C5.1 The Value Chain of Agriculture-Specific Input and Service Suppliers 110
C5.2 Farm Net Operating Expenses and Depreciation, 2009 111
C5.3 Distribution of Primary Agriculture Employment by Sector, 2009 112
C5.4 Farm Expenses on Machinery Fuel, 1990-2009 113
C5.5 Anhydrous Ammonia and Natural Gas Prices, 1991-2009 113

C5.6 Fertilizer Production by Fertilizer Year (July to June), 2006-2009 114
C5.7 Fertilizer Shipments in Canada by Fertilizer Year (July to June), 2001-2009 114
C5.8 Fertilizer Prices by Region by Fertilizer Year (July to June), 2001-2009 115
C5.9 Canadian and World Feed Grain Prices, 1991-2009 116
C5.10 Canadian Feeder Calf Prices, 1991-2009 116

C6: Natural Resource Use and Environmental Impacts ***117***

C6.1 Canadian Agricultural Land Use, 1991-2006 118
C6.2 Fertilizer Shipments to Canadian Agriculture Markets by Nutrient Content, 1990-2006 118
C6.3 Proportion of Crop Farms and Cropland Area Using Irrigation, 2006 119
C6.4 Water Sources of Irrigated Farmland, 2007 119
C6.5 Tillage Practices, 1991-2006 120
C6.6 Soil Conservation Practices, 2001-2006 120
C6.7 Percent of Farms with Wetlands and Waterways that Maintained a Riparian Buffer by Province, 2006 121
C6.8 Percent of Grazing Livestock Farms with Controlled Access to Surface Water by Province, 2001 and 2006 121
C6.9 Emissions and Emission Intensity of the Agriculture Sector, 1990-2007 122
C6.10 Emission Trends by Category, 1990-2007 122
C6.11 Emissions and Removals Associated with Land Management Changes, 1990 and 2007 123
C6.12 Percentage Change of Emissions per Unit of Production, 1981-2006 123
C6.13 Agri-Environmental Performance Indexes, 1981-2006 124
C6.14 Wildlife Habitat Capacity Change, 1986-2006 125

Section D – Government and the Agriculture and Agri-Food Sector

D1: Government Expenditures ***129***

D1.1 Government Expenditures in Support of the Agriculture and Agri-Food Sector, 1985-86 to 2009-10 130
D1.2 Government Expenditures in Support of the Agriculture and Agri-Food Sector and as a Share of Agriculture GDP, 1985-86 to 2009-10 130
D1.3 Government Expenditures in Support of the Agriculture and Agri-Food Sector by Province, 2009-10 131
D1.4 Government Expenditures in the Agriculture and Agri-Food Sector as a Share of Sector GDP by Province, 2009-10 131
D1.5 Federal Government Expenditures in Support of the Agriculture and Agri-Food Sector by Major Category, 2009-10 132
D1.6 Provincial Government Expenditures in Support of the Agriculture and Agri-Food Sector by Major Category, 2009-10 132
D1.7 Government Research Expenditures on Agriculture and Agri-Food, 1990-91 to 2009-10 133
D1.8 Support to Farm Producers Through Tax Rebates and Exemptions, 1991-92 to 2009-10 133
D1.9 Combined Federal/Provincial Corporate Income Tax Rates for Manufacturers and Processors, Ontario and Quebec, 1960-2009 134
D1.10 Stock of Public Engineering Infrastructure by Level of Government, 1961-2009 134

D2: Producer Support Estimate and Agricultural Policies in Other Countries ***135***

D2.1 PSE in Selected Countries, 1986-2009 136
D2.2 Composition of Support to Producers in Canada, 1986-1988 and 2007-2009 136
D2.3 Composition of Support to Producers in the EU, 1986-1988 and 2007-2009 137
D2.4 Composition of Support to Producers in the U.S., 1986-1988 and 2007-2009 137

FOREWORD

This 2011 report provides an economic overview of the Canadian agriculture and agri-food system.

It is meant to be a multi-purpose reference document to provide:

- an introduction to the agriculture and agri-food system;
- a snapshot of structural changes that are occurring throughout the system in response to various factors; and
- background data and information to inform public discussions on challenges and opportunities facing the Canadian agriculture and agri-food system.

Charts and tables with brief accompanying texts are used to summarize information and to provide base performance indicators.

The 2011 report begins with a special feature that provides a description of young farmers in Canada including their numbers by farm size, province and farm type and how they are performing relative to other farming age groups. Young Farmer Enterprises (YFEs), at 8% of farms performed better than other farms. This is important, given that Canada's future capacity to produce food for the world, as well as contribute to a vibrant agriculture and agri-food system, will depend on the number and skill set of these young farmers today.

The publication continues by reviewing each segment of the system, starting downstream with consumers to food distribution, and heading upstream to food and beverage processing, primary agriculture and input suppliers. It also contains a section that considers the natural resources available in Canada and the environmental impacts of agriculture. The report concludes with a review of government expenditures in support of agriculture, including international comparisons of government measures of support.

It describes the Canadian agriculture and agri-food system as a modern, highly complex, integrated, internationally competitive and growing part of the Canadian economy. It is a resilient system, responding to the challenges and opportunities it faces by restructuring and adapting to changing consumer demands, advancing technology, North American integration and globalization.

HIGHLIGHTS

Young Farmer Enterprises (YFEs)

- The Special Feature section this year focusses on Young Farmer Enterprises. Close to 8% of farms are YFEs and they performed better than other farms in Canada. More of them are in the medium to very large farm categories. They are well distributed across farm types, with slightly more operating hog, poultry and egg, and dairy farms, partly dispensing the myth that barriers to entry in the poultry and egg and dairy industries prevent young farmers from entering.
- In terms of financial performance, most YFEs, by farm type and size, earned higher gross revenues from their farm assets and had relatively higher profit margins than did other farms. They also reported higher farm employment income than other farms but ultimately earned lower total family income, due to the smaller amounts of investment and pension income compared to other farms.

Importance of the System to the Canadian Economy

- The agriculture and agri-food system encompasses several industries including the farm input and service supplier industries, primary agriculture, food and beverage processing, food distribution, retail, wholesale and foodservice industries.
- It continues to play an important role in federal and provincial economies, making a significant contribution to Gross Domestic Product (GDP) and employment. In 2009, it directly provided one in eight jobs, employing two million people and accounted for 8.2% of total GDP.
- While primary agriculture accounts for a small share of the total economy, (1.7% of GDP) it is at the heart of the agriculture and agri-food system. Any changes in commodity markets can have impacts on the performance of the primary agriculture industry and the whole supply chain.

Global Context

- The performance of the agriculture and agri-food system has been heavily influenced by developments over the past two years, which saw crude oil and commodity prices rise sharply to record levels in 2008, followed by price declines in 2009 in the wake of the serious global financial crisis and the subsequent recession, and record crops.
- This increased volatility in commodity markets and exchange rates has added an element of heightened uncertainty associated with marketing agriculture and agri-food products in Canada and around the world.
- This is particularly the case since the agriculture and agri-food sector has become increasingly internationally focussed over the past 15 years. Canada's share of world agriculture and agri-food trade has increased in response to trade liberalization and global economic growth. The composition of trade has also changed with increasing exports of higher value-added processed goods that meet changing global demands.
- At the same time, the emergence of major competitors in growth economies such as China and Brazil has added to the challenges and opportunities of competing in global markets.
- Export opportunities are critical for the growth of most Canadian agriculture and agri-food industries. In 2009, Canada was the fourth-largest exporter and sixth-largest importer of agriculture and agri-food products in the world, with exports and imports valued at $35.2 billion and $27.9 billion, respectively.

- The competitiveness of the agriculture and agri-food sector depends on its ability to remain profitable and viable over the long term in relation to its competitors for relevant markets. Long-run sales growth in domestic and international markets shows that Canada has remained relatively competitive in markets for agriculture and agri-food products in 2009.

Components of the Agriculture and Agri-Food System

- Changing consumer and societal demands are influencing changes throughout the whole agriculture and agri-food system. Consumers are demanding more variety, more convenience, more environmentally-friendly and healthier food choices, as well as food that addresses their values, e.g. organic and halal products, accompanied by proper assurances of quality and safety.
- Canadians enjoy some of the lowest food costs in the world, with food from stores accounting for almost 10% of personal household expenditures in recent years.
- The food and beverage processing industry transforms primary production, and was the most important manufacturing industry in Canada in 2009. It is important for the agriculture industry, since 42% of agricultural production is used as raw material inputs by the food processing industry.
- Food and beverage processing experienced growth in 2009 leading to higher GDP, but higher and volatile exchange rates are forcing the sector to adjust their business strategies.
- In response to challenges and changing market conditions, the primary agriculture industry has gone through considerable transformation and continues to restructure towards fewer, larger farms. There are also an increasing number of farms diversifying production, producing niche products such as organics, adopting environmentally-friendly production methods and producing non-traditional products such as biogas and bioproducts.
- Canadian farms differ by size, scale, farm type and typology, while farm operators differ in their management skills and business strategies. Differences in performance between farms can be explained by this diversity. Some farm families rely more on off-farm income to help them manage uncertainty due to production and marketing risk, and others diversify production.
- Real gross output in Canadian agriculture grew more than in the United States over the period 1961 to 2005.
- Input suppliers and service providers also perform important functions in the agriculture and agri-food system. In 2009, producers spent over $35.3 billion in operating expenses, with commercial feed constituting the largest component. Recent decreases in the costs of fuel, fertilizer and pesticides eliminated some of the cost pressures on farmers in 2009.

Government Expenditures in Support of the Sector

- Total government (federal and provincial) support to the agriculture and agri-food sector increased slightly from 2008-2009 to reach an estimated $8.4 billion in 2009-2010, or 34% of total sector GDP.
- Program payments continue to account for the largest portion of both federal and provincial government expenditures in support of the sector in 2009-2010, followed by spending on research and inspection.
- Government support to the sector varies across provinces. On the basis of government support as a percentage of agriculture and agri-food GDP, farmers in Newfoundland and Labrador, Quebec, Nova Scotia and Manitoba received the most support.
- Government spending in support of public R&D in agriculture and agri-food is important for the innovation and competitiveness of the sector and has been increasing over the past few years.
- Agricultural policies in Canada and other countries have evolved over time. Some countries have made major reforms to their agricultural policies, leading to reductions in levels of support and modifications to the types of support provided.
- Canada's Producer Support Estimate (PSE) for all commodities was estimated at 20% in 2009, compared to 10% for the U.S. and 24% for the EU. In 2009, the PSE declined for the main OECD countries mainly because of higher gross farm receipts and reduced market price support due to higher world commodity prices.

SECTION A

Special Feature

SECTION A1

Young Farmer Enterprises

INTRODUCTION:

The future of farming in Canada depends, to a great extent, on the ability of the sector to recruit a sufficient number of young farmers with the skills and know-how required to take over farm businesses from their increasingly aging predecessors.

This section provides a snapshot of "young farmer enterprises" (defined as a farm managed solely by young farmers between 18 and 39 years of age). This will be done by describing their relative numbers, size distribution, provincial distribution and financial performance. This analysis is limited to young farmers who make all the business decisions, to isolate their impact from those working alongside older operators.

In Canada, one in five farms are operated by young farmers

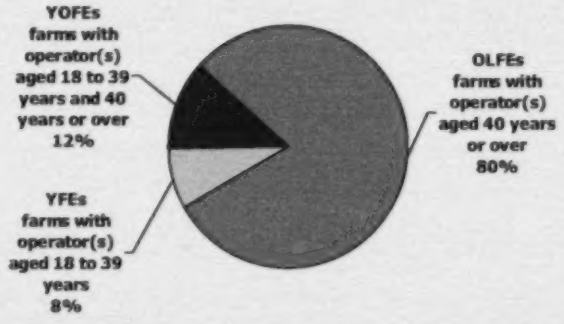
- **In 2008, 20% of farms were operated by young farmers either as a young farmer enterprise (YFE) or as a young and older farmer enterprise (YOFE).**

  Almost 8% of farms in Canada were operated solely by young farmers defined here as young farmer enterprises (YFEs).

  Another 12% of farms were young and older farmer enterprises (YOFEs), where at least one operator was under 40 years of age and the other(s) were 40 years of age or over.

  The remaining 80% of farms had older operators, 40 years of age or over (OLFEs).

Chart A1.1
Distribution of Farms by Farm Group
2008



Source: Statistics Canada, Farm Financial Survey, 2008 Reference Year.

- **As expected, YFEs reported less experience in farming.**

  Those farms with young operators (under 40 years of age), had an average of 12 years of farming experience.

  Those farms operated by older operators naturally had many more years of farming experience. In the case of farms with the oldest operators (60 years of age and older) – these operators reported 40 years of farming experience, on average.

Chart A1.2
Average Number of Years of Farming Experience
by Age of Oldest Operator
2008

FARMS BY AGE OF OLDEST OPERATOR	AVERAGE # OF YEARS OF FARMING EXPERIENCE
Less than 40 years of age	12
40 to 49 years of age	21
50 to 59 years of age	28
60 years and older	40
ALL FARMS	30

Source: Statistics Canada, Farm Financial Survey, 2008 Reference Year.

NOTE(S):

FARM GROUPS: Young farmer enterprises (YFEs) are defined as those farms in which all operators (whether one or two or more) are between 18 and 39 years of age. Another group of farms is the **young and older farmer enterprises** (YOFEs), which includes young farmers (18 to 39 years of age) as well as older operators (40 years of age or over). The other farm group is **older farmer enterprises** (OLFEs) with operators aged 40 years or over.

YFEs are fairly well distributed across farm types

- **Proportionally, there were slightly more YFEs in hog and poultry and egg and dairy farming compared to other farm types.**

  In 2008, approximately 16% of hog farms, 13% of poultry and egg farms and 10% of dairy farms were YFEs, while only 8% of grain and oilseed and beef cattle farms were YFEs.

Chart A1.3
Number and Share of YFEs by Farm Type
2008

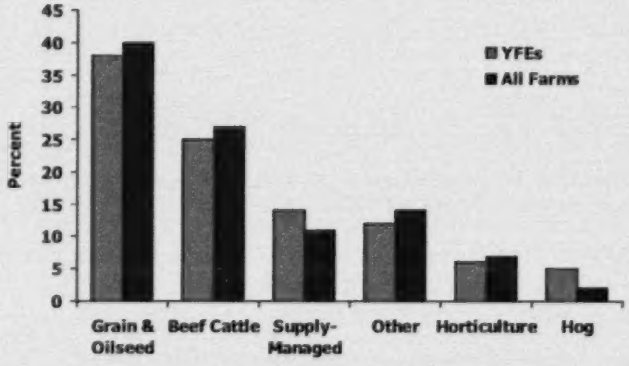
FARM TYPE	# OF YFE FARMS	YFEs AS A % OF ALL FARMS
Grain & Oilseed	4,815	8
Beef Cattle	3,240	8
Other	1,470	7
Dairy	1,360	10
Horticulture	800	7
Hog	610	16
Poultry & Egg	430	13
ALL FARMS	12,725	8

Source: Statistics Canada, Farm Financial Survey, 2008 Reference Year.

- **Most YFEs were grain and oilseed farms and beef cattle farms.**

  The bulk of YFEs were grain and oilseed farms (38%) and beef cattle farms (25%), mirroring the distribution of all farms by farm type.

Chart A1.4
Distribution of YFEs and All Farms by Farm Type
2008



Source: Statistics Canada, Farm Financial Survey, 2008 Reference Year.

Proportionally more medium, large and very large farms are YFEs

- **In 2008, 10% of medium and large farms and 11% of very large farms were YFEs.**

  To some extent, this distribution can be explained by the fact that hog and supply-managed farms tended to be larger and also had proportionally more YFEs.

  About 5% of million-dollar farms were YFEs.

  In the same way that a large percentage (34%) of all farms are small, 38% of YFEs were small farms. In absolute terms, there were more YFEs that were small farms than any other farm size.

Chart A1.5
Number and Share of YFEs by Revenue Class
2008

REVENUE CLASS	# OF YFE FARMS	YFEs AS A % OF ALL FARMS
Small ($10,000 to $99,999)	4,905	7
Medium ($100,000 to $249,999)	3,305	10
Large ($250,000 to $499,999)	2,515	10
Very Large ($500,000 to $999,999)	1,530	11
Million Dollar ($1,000,000 and over)	470	5
ALL FARMS	12,725	8

Source: Statistics Canada, Farm Financial Survey, 2008 Reference Year.

- **The proportion of YFEs varies by province.**

  Saskatchewan and Quebec had proportionally more YFEs. About 10% of farms in Saskatchewan and Quebec were YFEs. British Columbia had the lowest proportion of YFEs (4%). However, Saskatchewan and Ontario had the largest number of YFEs in absolute terms.

Chart A1.6
Number and Share of YFEs by Province
2008

PROVINCE	# OF FARMS	YFEs AS A % OF ALL FARMS
Atlantic Provinces	350	7
Quebec	2,505	10
Ontario	3,055	8
Manitoba	940	7
Saskatchewan	3,255	10
Alberta	2,260	7
British Columbia	360	4
CANADA	12,725	8

Source: Statistics Canada, Farm Financial Survey, 2008 Reference Year.

YFEs rent a greater portion of farmland from others to increase their farm production capacity

- **YFEs tended to operate fewer acres and rented more land than did other farms.**

  In 2008, YFEs rented 375 acres from others or 48% of the total 775 acres they operated, on average, while other farms only rented 35% of their total land operated (330 out of 940 acres).

  On the other hand, other farms owned a greater share of their farmland (65%), while YFEs owned a smaller percentage (52%).

  The average number of total acres operated by YFEs was smaller (775) than the average number of acres operated by other farms (940).

Chart A1.7
Average Area of Land Owned vs. Rented
2008

	YFEs	OTHER FARMS
Land owned and operated	400 (52%)	615 (65%)
Land rented from others	375 (48%)	330 (35%)
Total land operated	775 (100%)	940 (100%)

Source: Statistics Canada, Farm Financial Survey, 2008 Reference Year.

NOTE(S):

Other farms is another group composed of YOFEs and OLFEs.

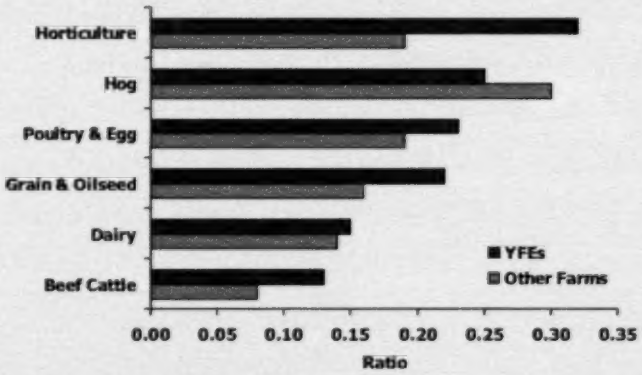
YFEs generated higher gross revenue from their farm assets compared to other farms, and this varies by farm type and revenue class

- **YFEs generated higher gross revenue from their farm assets than did other farms, especially horticulture farms.**

  With the exception of hog farms, YFEs utilized their farm assets more effectively than other farms based on gross revenue generated per dollar of farm assets. For horticulture farms in particular, YFEs generated $0.32 of gross revenue per dollar of total assets compared to $0.19 for other farms.

  Hog farms operated by YFEs generated slightly smaller gross revenue from their farm assets than did other farms ($0.28 versus $0.31).

Chart A1.8
Gross Revenue per Dollar of Farm Assets by Farm Type
2008

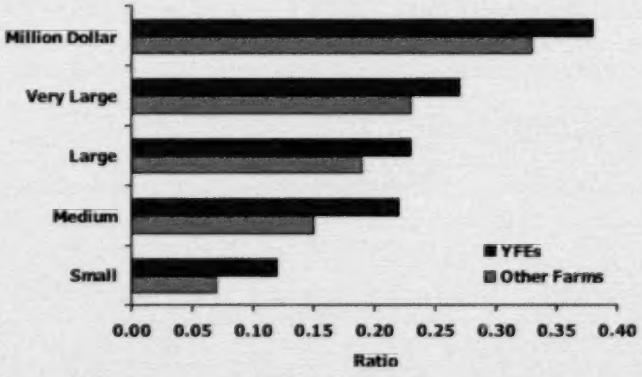


Source: Statistics Canada, Farm Financial Survey, 2008 Reference Year.
Note: 1) All ratios are calculated using the median.
2) The value of farm assets is reported at market value.

- **When farm size is considered, YFEs reported higher gross revenue from their farm assets than did other farms, for all sizes of farms.**

  Medium-sized YFEs generated $0.22 of gross revenue per dollar of assets versus $0.15 for other farms of the same size. YFEs operating million-dollar farms were also characterized by higher gross revenue per dollar of assets of almost $0.40 versus $0.35 for other farms.

Chart A1.9
Gross Revenue per Dollar of Farm Assets by Revenue Class
2008



Source: Statistics Canada, Farm Financial Survey, 2008 Reference Year.
Note: 1) All ratios are calculated using the median.
2) The value of farm assets is reported at market value.

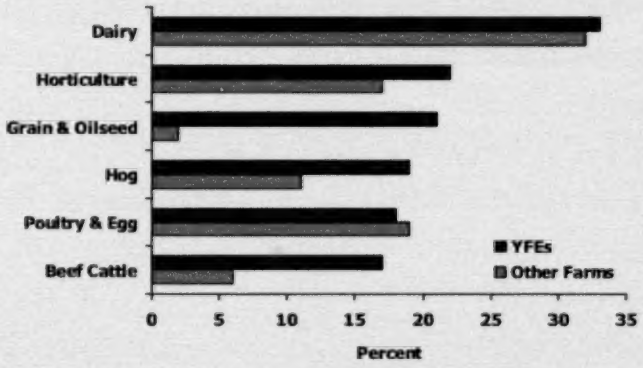
Profit margins for YFEs are higher, indicating better farm performance

- **For most of the major farm types, profit margins for YFEs were higher than for other farms.**

  Dairy farms, whether operated by young or older operators, reported higher profit margins than any other farm type in 2008.

  Poultry and egg farms operated by young operators tended to report slightly lower profit margins than other farms. On the other hand, YFEs operating beef cattle and grain and oilseed farms reported profit margins that were substantially higher than those reported by other farms.

Chart A1.10
Profit Margin Ratio by Farm Type
2008

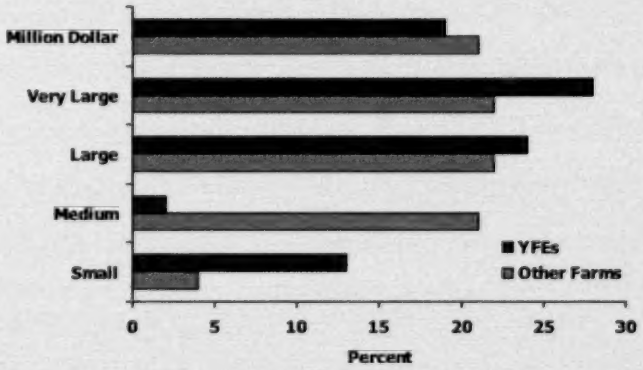


Source: Statistics Canada, Farm Financial Survey, 2008 Reference Year.
Note: All ratios are calculated using the median.

- **Profit margins for some sizes of YFEs were higher than those of other farms, particularly small, large and very large farms.**

  Profit margins for million-dollar farms and medium-sized YFEs were lower than those of the same size of other farms. On average, however, profit margins were higher for YFEs than for other farms.

Chart A1.11
Profit Margin by Revenue Class
2008



Source: Statistics Canada, Farm Financial Survey, 2008 Reference Year.
Note: All ratios are calculated using the median.

NOTE(S):

The Profit Margin Ratio is measured by:

$$\frac{\text{Net Operating Income + Interest Expenses}}{\text{Gross Revenue}}$$

When all income sources are considered, YFEs earn more from the farm and less from non-farm sources than do other farms

- **YFEs earned, on average, almost half of their family income from the farm and less from non-farm sources than did other farms.**

  YFEs earned 48.5% of their total family income from farm sources compared to 44.2% for other farms. Income from farm sources is almost identical for both YFEs and other farms in absolute terms.

  For non-farm income, YFEs earned 51.5% of their total family income from non-farm sources versus the 55.8% that other farms earned.

  However, as a result of the substantially higher investment and pension income earned by other farms ($16,700), other farms earned more total family income than did YFEs ($94,300 compared to $85,700) in absolute terms.

Chart A1.12
Sources of Farm Family Income
2008

	YFEs	OTHER FARMS
	PERCENT	
Family share of net operating income*	39.9	34.5
Farm wages & salaries paid to family	8.6	9.7
Total farm sources of income	48.5	44.2
Non-farm employment income	45.7	38.1
Other non-farm income (invest., pension, etc.)	5.8	17.7
Total non-farm income	51.5	55.8
TOTAL FAMILY INCOME	100.0	100.0

Source: Statistics Canada, Farm Financial Survey, 2008 Reference Year.
Note: *Family share of net operating income before capital cost allowance.

NOTE(S):

Non-Farm Employment Income: Employment income which originates from sources other than the farm operation (such as gross wages and salaries) and net self-employment income (from business, professional, commission and fishing) not related to the farm operation.

Other Non-Farm Income: Investment income (such as interest, taxable capital gains and dividends) which originates from sources other than the farm operation, pensions, and other income from government programs for families or individuals and other income not from the farm operation.

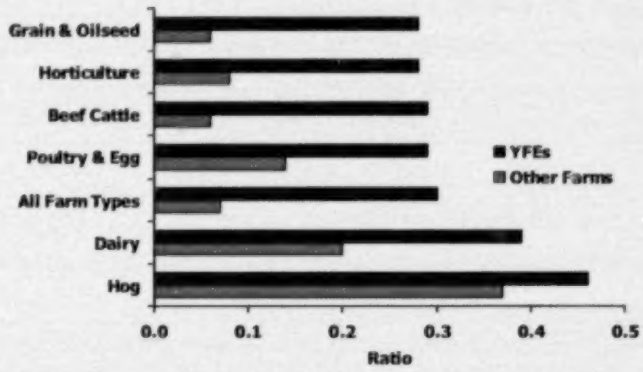
For all farm types, YFEs have higher debt to asset ratios than do other farms

- **Debt to asset ratios were substantially higher for YFEs than for other farms for all farm types.**

  The highest debt to asset ratios in 2008 were reported by hog farms, whether YFEs or other farms.

  YFEs are expected to have higher debt levels because it is assumed that they have borrowed substantially more, and have paid off less of their debt than other farms. This is because YFEs who were relatively new to the farming business were just starting out and may have only recently invested in land, buildings, quotas, new capital and machinery and equipment, for which they probably held a high degree of debt.

Chart A1.13
Debt to Asset Ratio by Farm Type
2008

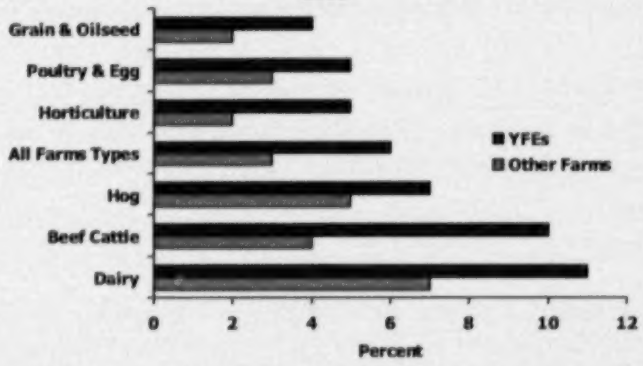


Source: Statistics Canada, Farm Financial Survey, 2008 Reference Year.
Note: The value of farm assets is reported at market value.

- **Given the higher debt that YFEs held, their interest expenses were higher than for other farms.**

  Dairy and beef cattle farms operated by YFEs had higher interest expenses as a proportion of total gross revenue in 2008 than other farms.

Chart A1.14
Interest Expense as a Percent of Gross Revenue by Farm Type
2008



Source: Statistics Canada, Farm Financial Survey, 2008 Reference Year.

Due to the higher levels of debt, YFEs report lower net worth compared to other farms

- **In 2008, the average net worth for YFEs was lower than for other farms.**

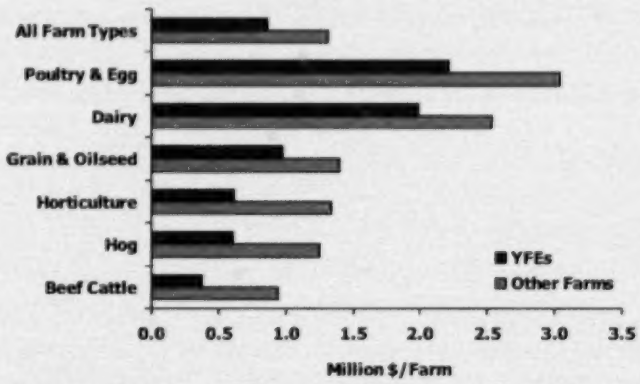
  YFEs reported an average net worth of $861,000 per farm compared to $1.32 million for other farms.

  YFEs generally had lower net worth than other farms for all farm types.

  Poultry and egg and dairy farms operated by young farmers reported the highest net worth. Hog and beef cattle farms reported the lowest net worth.

  The net worth of YFEs operating horticulture, hog and beef cattle farms is about half of the net worth of their respective counterparts.

Chart A1.15
Average Net Worth by Farm Type
2008

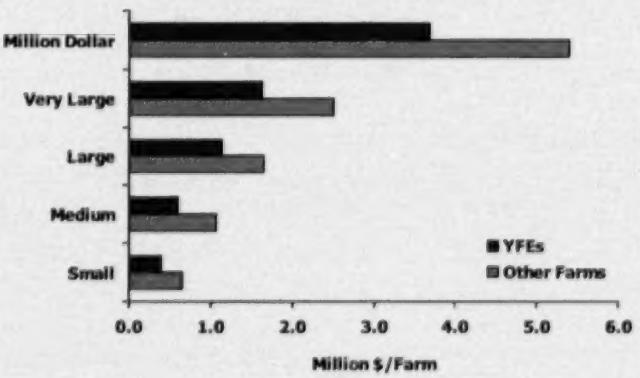


Source: Statistics Canada, Farm Financial Survey, 2008 Reference Year.

- **By revenue class, the largest farms reported the highest net worth per farm, regardless of whether they were YFEs or other farms.**

  Million-dollar farms which were operated by YFEs, reported the highest net worth of any other farm size, followed by very large farms. Small YFEs reported the lowest net worth in 2008.

Chart A1.16
Average Net Worth by Revenue Class
2008



Source: Statistics Canada, Farm Financial Survey, 2008 Reference Year.

NOTE(S):

Net Worth: Total assets minus total liabilities of the farm.

SUMMARY:

Given the importance of Canada's future capacity to produce agricultural products in a manner that ensures the future prosperity and competitiveness of the sector, it is important to understand the extent to which YFEs are flourishing. There is concern over whether there is a sufficient number of young farmers with the skills and know-how required, so that they will be resilient and adaptable and capable of innovating and prospering to respond to future global market conditions.

This section provides a snapshot of YFEs in Canada to help understand how well distributed they are across the country, by farm type and farm size. It is also important to understand how well they are doing in terms of financial performance.

They did have strikingly higher debt than other farms, and this is not really surprising given that they are at an earlier stage in their life and are clearly paying for assets that they have more recently acquired, such as new machinery and equipment, land, buildings, livestock and possibly quotas.

Section B

The Agriculture and Agri-Food System and the Canadian Economy

SECTION B1

GDP and Employment

INTRODUCTION:

The Canadian agriculture and agri-food system is a complex and integrated supply chain of importance to the Canadian economy. It makes significant direct and indirect contributions to Canadian Gross Domestic Product (GDP) and employment, but its importance varies by province.

In 2009, GDP and employment in the agriculture and agri-food system (and sector) was impacted by the economic recession, the appreciated dollar and lower commodity prices. While employment in food retailing and primary agriculture was up, that in foodservice was down.

The agriculture and agri-food system plays a significant role in the Canadian economy

- **The Canadian agriculture and agri-food system accounted for 8.2% of total Canadian Gross Domestic Product (GDP) in 2009.**

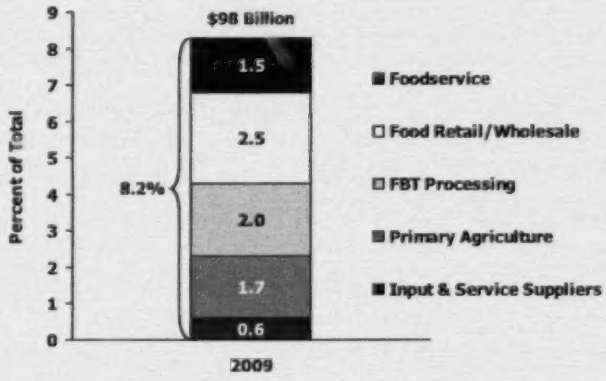
  The food retail/wholesale industry was the largest contributor to the agriculture and agri-food system's GDP, at 2.5% followed by food, beverage and tobacco processing, at 2.0%.

  Primary agriculture accounted for about 1.7% of national GDP in 2009.

  Total agriculture and agri-food system GDP was $98 billion in 2009, down slightly from $99 billion in 2008, primarily as a result of lower agriculture GDP.

  Food retailing GDP rose slightly in importance, from 2.4% to 2.5%, as consumers spent more on food from stores.

Chart B1.1
Agriculture and Agri-Food System's Contribution to GDP
2009*



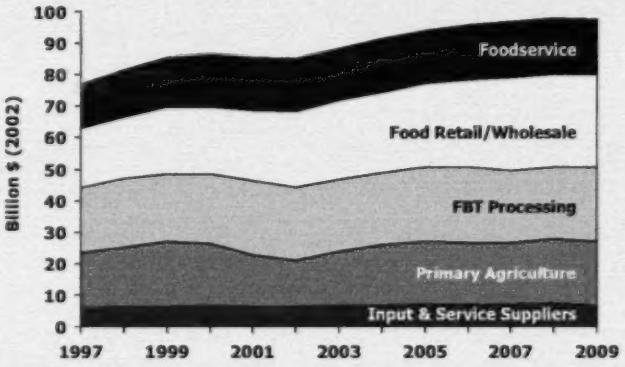
Source: Statistics Canada and AAFC calculations.
Note: *2009 data is preliminary.

- **Since 1997, the overall agriculture and agri-food system has been growing at an average annual rate of 2.3%, which is below the 3.0% growth rate of the overall economy.**

  Food retail/wholesale is the fastest growing component, with an average annual growth rate of 4.7%. Primary agriculture and food, beverage and tobacco processing GDP each grew, on average, by 1.3% per year.

  In 2009, foodservice and primary agriculture GDP declined slightly due to the impacts of the recession and lower commodity prices.

Chart B1.2
Agriculture and Agri-Food System's Contribution to GDP
1997-2009*



Source: Statistics Canada and AAFC calculations.
Note: *2009 data is preliminary.

NOTE(S):

See Glossary for definition of the agriculture and agri-food system and sector.

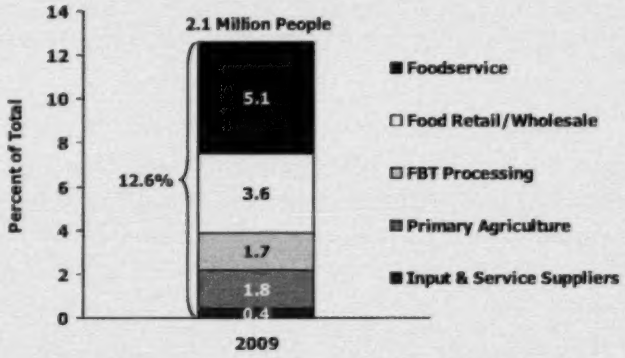
It also makes an important contribution to overall Canadian employment

- **The Canadian agriculture and agri-food system provided one in eight jobs in 2009, employing over 2 million people.**

  In 2009, the foodservice industry was the major employer in the agriculture and agri-food system, followed by the food retail/wholesale industry.

  Employment in primary agriculture continues to decline as a share of the total at 1.8%.

Chart B1.3
Agriculture and Agri-Food System's Contribution to Employment
2009



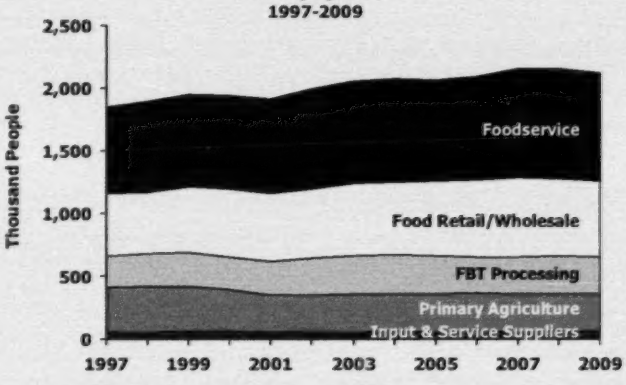
Source: Statistics Canada and AAFC calculations.

- **Employment in the agriculture and agri-food system has been growing at an average annual rate of 1.2% since 1997, which is less than the average annual growth rate of 2.0% for the national labour force.**

  Foodservice is the largest employer within the agri-food system, and also grew the fastest, at an average annual rate of 2.0%. In 2009, employment in foodservice was down substantially by almost 3% due to the impacts of the recession.

  Primary agriculture and food processing each account for about 1.8% of the labour force. Employment in primary agriculture has declined, while food processing employment has grown by about 1.2% per year on average since 1997.

Chart B1.4
Agriculture and Agri-Food System's Contribution to Employment
1997-2009



Source: Statistics Canada and AAFC calculations.

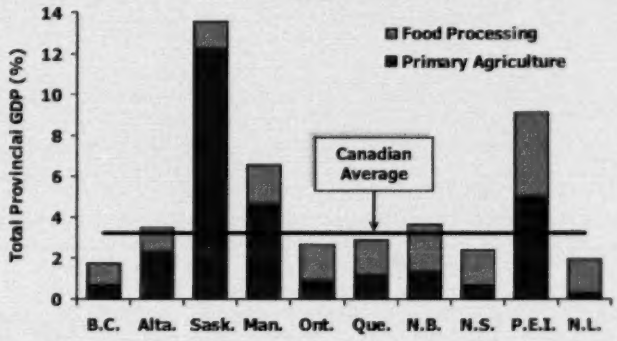
The agriculture and agri-food sector is an important source of economic activity in most provinces

- **In terms of contribution to total provincial GDP, agriculture and food processing play the largest role in Saskatchewan and Prince Edward Island, accounting for over 13% and 9% of provincial GDP, respectively, in 2009.**

  The mix between primary agriculture and food processing also varies across provinces. East of Manitoba (except for Prince Edward Island), food processing accounts for a larger share of provincial GDP than agriculture.

  In the Prairies Provinces, primary agriculture plays the dominant role in the agri-food sector.

Chart B1.5
Agriculture and Food Processing's Contribution to Provincial GDP
2009*

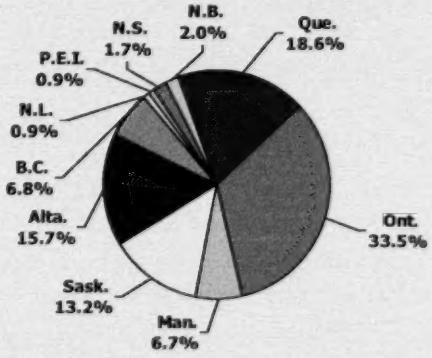


Source: Statistics Canada and AAFC calculations.
Note: Excludes beverage and tobacco processing.
*2009 data is preliminary.

- **The contribution of each province to total Canadian agriculture and food processing sector GDP varies across Canada.**

  In 2009, Ontario, Quebec and Alberta accounted for almost 70% of total Canadian agriculture and food processing GDP.

Chart B1.6
Provincial Contribution to Canadian Agriculture and Food Processing GDP
2009*



Source: Statistics Canada and AAFC calculations.
Note: Excludes beverage and tobacco processing.
*2009 data is preliminary.

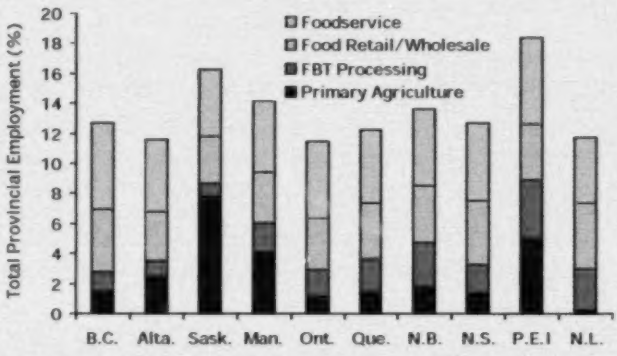
The agriculture and agri-food system is also a major employer in most provincial economies

- **In 2009, employment in the agriculture and agri-food system accounted for the largest share of provincial employment in Prince Edward Island and Saskatchewan at 18% and 16%, respectively.**

  In most provinces, employment in foodservice accounts for the largest share of total employment in the agriculture and agri-food system, followed by food retailing/wholesaling.

  The exception was Saskatchewan, where employment in primary agriculture was a greater share of provincial agriculture and agri-food system employment than in any other province. In Prince Edward Island and Manitoba, primary agriculture was the second most important employer after foodservice.

Chart B1.7
Agriculture and Agri-Food System's Share of Provincial Employment
2009*



Source: Statistics Canada and AAFC calculations.

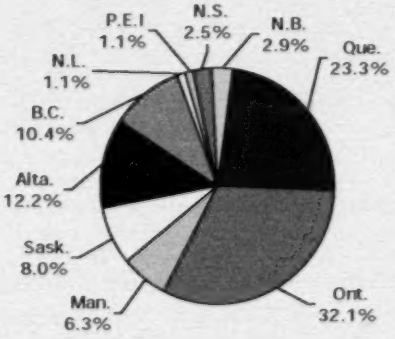
Note: Provincial input & service suppliers have been excluded because of reliability and confidentiality data concerns with many of its component industries.
*2009 data is preliminary.

- **Ontario and Quebec accounted for the largest share of employment in agriculture and food processing.**

  In 2009, Ontario, Quebec and Alberta accounted for almost 70% of total Canadian agriculture and food processing employment.

  In 2009, employment in the agri-food sector rose in Alberta and Manitoba but declined in Quebec and British Columbia.

Chart B1.8
Provincial Contribution to Canadian Agriculture and Food Processing Employment
2009*



Source: Statistics Canada and AAFC calculations.

Note: Excludes beverage and tobacco processing.
*2009 data is preliminary.

SECTION B2

International Trade

INTRODUCTION:

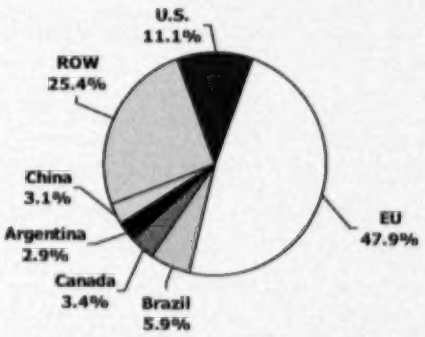
Exports continued to be a key component to the success of Canada's agriculture and agri-food sector in 2009. In general, the U.S. was the main market for Canadian exports, but the degree to which individual commodity groups relied on the U.S. varied considerably. Canadian grains and grain products, for example, were exported to over 110 countries. In terms of export growth, a general decline in commodity prices in 2009 compared to 2008 contributed to lower export values for many commodity groups in 2009, but export volumes for most groups continued to grow or remained steady. The benefits of trade are not limited to exports sales. Trade gives Canadians access to a wider range of products than those produced domestically, a fact highlighted by the diversity of imports in 2009.

Canada is an important player in the international trade of agriculture and agri-food products

- **Canada, with export sales of $35.2 billion, accounted for 3.4% of the total value of world agriculture and agri-food exports in 2009.**

  Canada was the world's fourth-largest exporter after the EU, the U.S. and Brazil.

Chart B2.1
World Agriculture and Agri-Food Export Share by Country of Origin 2009

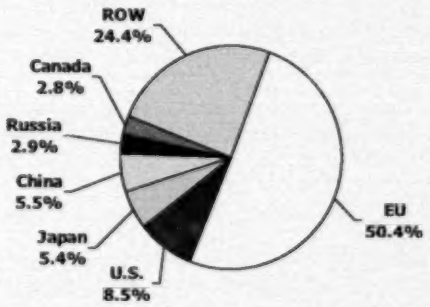


Source: Global Trade Atlas and AAFC calculations.
Note: 1) Excludes all seafood (fresh and processed).
2) Includes intra-EU trade.

- **With $27.9 billion in imports, Canada accounted for 2.8% of the total value of world agriculture and agri-food imports in 2009.**

  Canada was the world's sixth-largest importer after the EU, the U.S., China, Japan and Russia.

Chart B2.2
World Agriculture and Agri-Food Import Share by Country of Destination 2009



Source: Global Trade Atlas and AAFC calculations.
Note: 1) Excludes all seafood (fresh and processed).
2) Includes intra-EU trade.

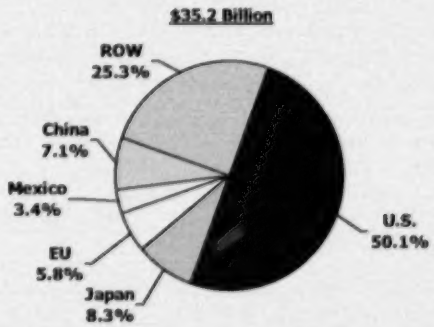
The U.S. continues to be Canada's most important agriculture and agri-food trading partner

- **In 2009, the U.S. purchased half of the value of all Canadian agriculture and agri-food exports.**

  Taken together, Japan, the EU, China and Mexico accounted for another 24.6% of exports. One hundred and sixty-seven countries accounted for the remaining one-quarter of all export sales.

  Canada's dependence on the U.S. was below the peak of 67% in 2002 but above 31% in 1988.

Chart B2.3
Destinations of Canadian Agriculture and Agri-Food Exports
2009



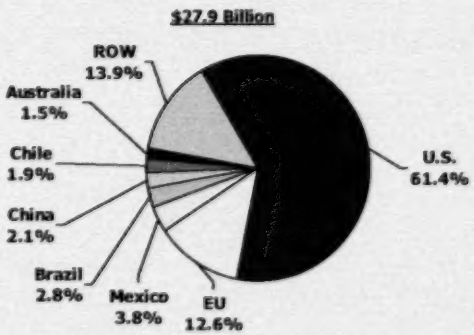
Source: Statistics Canada and AAFC calculations.
Note: Includes goods returned to Canada.

- **The U.S. accounted for 61.4% of the value of agriculture and agri-food products imported by Canada in 2009.**

  The EU, Mexico, Brazil, China, Chile and Australia together accounted for roughly another one-quarter of all import sales.

  Import shares have not varied much over the past two decades.

Chart B2.4
Origins of Canadian Agriculture and Agri-Food Imports
2009



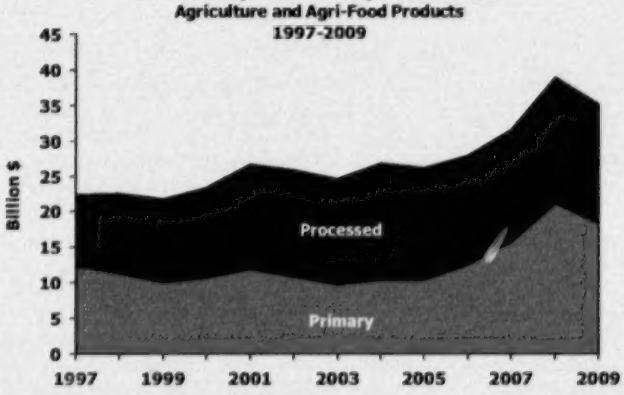
Source: Statistics Canada and AAFC calculations.

Import and export values of agriculture and agri-food products were lower than in 2008, but higher than previous years

- **The total value of agriculture and agri-food exports of $35.2 billion in 2009 was lower than the $38.9 billion reported in 2008, partly due to lower export prices.**

  Canadian exports of primary agriculture and agri-food products increased from $12.2 billion in 1997 to $18.3 billion in 2009. Exports of processed products increased from $10.2 billion in 1997 to $16.8 billion in 2009.

Chart B2.5
Canadian Exports of Primary and Processed Agriculture and Agri-Food Products
1997-2009

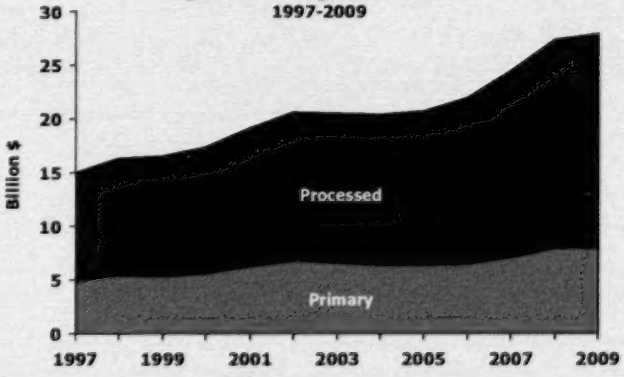


Source: Statistics Canada and AAFC calculations.
Note: Includes goods returned to Canada.

- **The total value of agriculture and agri-food imports of $27.9 billion in 2009 was slightly higher than the $27.4 reported in 2008.**

  Import sales of processed agriculture and agri-food products to Canada rose from $10.1 billion in 1997 to $19.9 billion in 2009. Import sales of primary products rose from $4.9 billion to $8.1 billion over the same period.

Chart B2.6
Canadian Imports of Primary and Processed Agriculture and Agri-Food Products
1997-2009



Source: Statistics Canada and AAFC calculations.

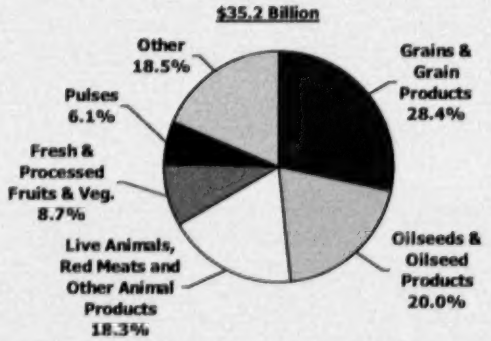
By value, two-thirds of all Canadian agriculture and agri-food exports fall into three main categories, while imports are more varied

- **Of the $35.2 billion in Canadian agriculture and agri-food exports in 2009, grains and grain products accounted for 28.4%.**

  Oilseeds and oilseed products were the next-largest category in terms of export sales at 20.0%, while live animals, red meats and other animal products accounted for another 18.3%.

  Other large export categories include fresh and processed fruit and vegetable products (8.7%) and pulses (6.1%).

Chart B2.7
Commodity Composition of Canadian Agriculture and Agri-Food Export Sales
2009

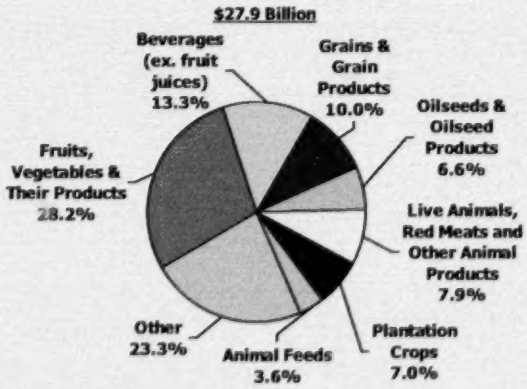

$35.2 Billion
Other 18.5%
Grains & Grain Products 28.4%
Pulses 6.1%
Fresh & Processed Fruits & Veg. 8.7%
Live Animals, Red Meats and Other Animal Products 18.3%
Oilseeds & Oilseed Products 20.0%

Source: Statistics Canada and AAFC calculations.
Note: Includes goods returned to Canada.

- **Fruits, vegetables and their products, which include fruit juices, represented more than one-quarter of Canadian agriculture and agri-food import sales in 2009.**

  Beverages, at 13.3%, and grains and grain products, at 10.0%, were the next-largest categories by import value.

Chart B2.8
Commodity Composition of Canadian Agriculture and Agri-Food Import Sales
2009


$27.9 Billion
Beverages (ex. fruit juices) 13.3%
Grains & Grain Products 10.0%
Oilseeds & Oilseed Products 6.6%
Fruits, Vegetables & Their Products 28.2%
Live Animals, Red Meats and Other Animal Products 7.9%
Other 23.3%
Animal Feeds 3.6%
Plantation Crops 7.0%

Source: Statistics Canada and AAFC calculations.

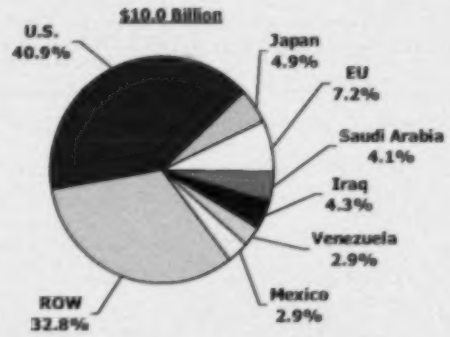
Export prices for Canadian grains and grain products remained high in 2009, relative to previous years

- **Canadian grains and grain products are exported to a diverse set of markets.**

  Although the U.S. is certainly a major market, accounting for 40.9% of export sales, Canadian grains and grain products were exported to 110 countries in 2009.

  By value, the majority of Canadian grains and grain product exports are wheat – red spring, white winter and durum.

Chart B2.9
Canadian Grains and Grain Product Exports by Country of Destination 2009

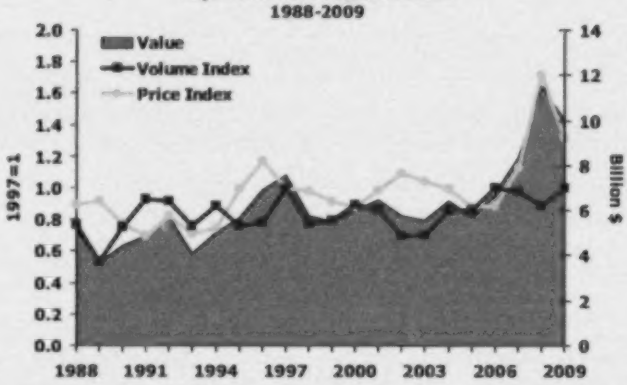


Source: Statistics Canada and AAFC calculations.
Note: Includes goods returned to Canada.

- **While prices of grains and grain products were down somewhat from their peak in 2008, they remained high relative to prices throughout the 1990s and early 2000s.**

  Export volumes of grains and grain products were relatively constant and the value of exports reached $10.0 billion in 2009, lower than $11.5 billion in 2008, but well above export values in earlier years.

Chart B2.10
Canadian Grains and Grain Product Export Price and Volume Indexes 1988-2009



Source: Statistics Canada and AAFC calculations.
Note: Includes goods returned to Canada.

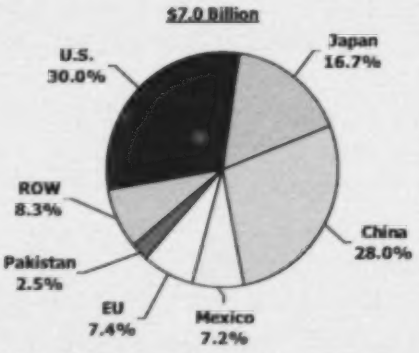
Export volumes of oilseeds and oilseed products continued to rise in 2009, with China becoming almost as important an export market as the U.S.

- **The U.S. and China were Canada's largest export markets for oilseeds and oilseed products in 2009, accounting for 30% and 28%, respectively.**

  Unlike grains and grain products, Canadian oilseeds and oilseed products are shipped to a relatively small number of key markets. The top ten markets account for over 95% of export sales.

  Canadian oilseeds and oilseed product exports by value are primarily canola, rapeseed, rapeseed oil and soya beans.

Chart B2.11
Canadian Oilseeds and Oilseed Product Exports by Country of Destination 2009

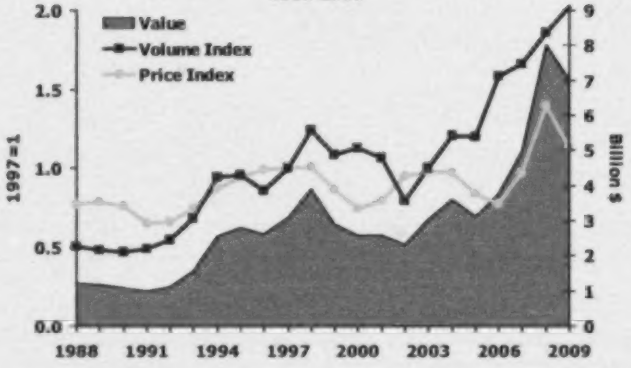


Source: Statistics Canada and AAFC calculations.
Note: Includes goods returned to Canada.

- **Several years of steady growth in export volumes of oilseeds and oilseed products contributed to export values of $7.0 billion in 2009.**

  Higher prices of oilseeds and oilseed products in 2008, and their subsequent decline in 2009, also contributed to changes in export values.

Chart B2.12
Canadian Oilseeds and Oilseed Product Export Price and Volume Indexes 1988-2009



Source: Statistics Canada and AAFC calculations.
Note: Includes goods returned to Canada.

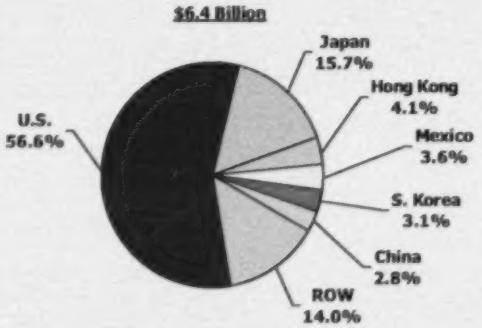
Growth in export values of live animals, red meats and other animal products has been driven by greater export volumes, with the U.S. being the primary market

- **The U.S. is Canada's largest export market for live animals, red meats and other animal products, accounting for 56.6% of sales in 2009.**

  Sales to the U.S. were nearly four times greater than sales to the next-largest export destination, Japan.

  Canada's primary exports in this category are fresh or frozen pork, beef and non-dairy cattle.

Chart B2.13
Canadian Live Animals, Red Meats and Other Animal Product Exports by Country of Destination
2009



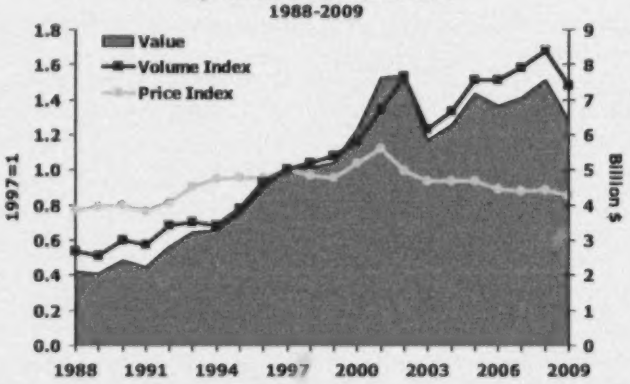
Source: Statistics Canada and AAFC calculations.
Note: Includes goods returned to Canada.

- **Most of the growth in export values of live animals, red meats and other animal products between 1988 and 2009 was due to growth in export volumes.**

  In contrast, export prices rose slightly between 1988 and 2001, before declining gradually over the remainder of the period. The value of exports rose from $2.1 billion in 1988 to $6.4 billion in 2009.

  U.S. border restrictions on the flow of live cattle in 2003 due to Bovine Spongiform Encephalopathy and a reduction in exports to the U.S. in 2009 with the advent of Country of Origin Labelling (COOL) contributed to greater volatility in export quantities. A slowdown in export quantities of red meats has meant slower growth for this category overall.

Chart B2.14
Canadian Live Animals, Red Meats and Other Animal Product Export Price and Volume Indexes
1988-2009



Source: Statistics Canada and AAFC calculations.
Note: Includes goods returned to Canada.

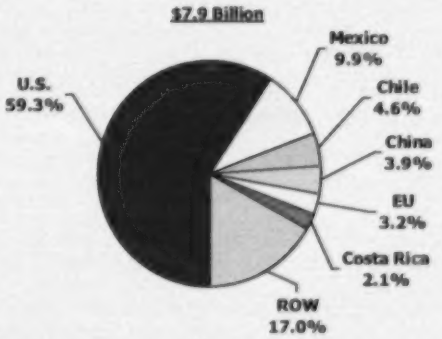
The value of imports of fruits, vegetables and their products into Canada has increased over time, propelled by steady volume and price growth

- **The U.S. accounted for nearly 60% of the value of fruits, vegetables and their products imported into Canada in 2009.**

  Mexico was the second-largest source, accounting for approximately one-tenth of our imported fruits, vegetables and their products, by value.

  Fruit juices are the largest item by value within fruit, vegetable and their product imports; however, they represent less than 10% of overall value. A wide variety of fruits and vegetables are imported into Canada.

Chart B2.15
Canadian Fruits, Vegetables and Their Products*
Imports by Country of Origin
2009

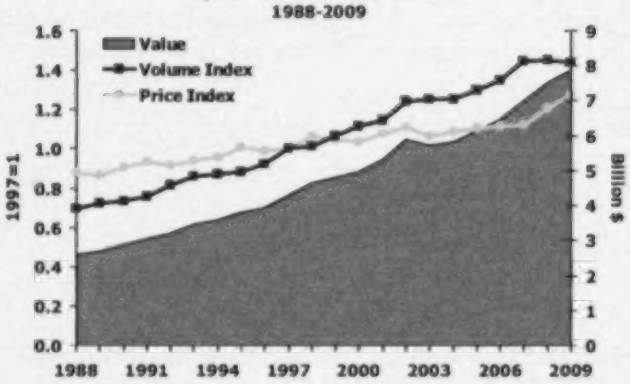


Source: Statistics Canada and AAFC calculations.
Note: *Includes fruit juice and other processed items.

- **Steady growth in import volumes and somewhat slower growth in prices contributed to steady growth in the value of fruits, vegetables and their products imported into Canada between 1988 and 2009.**

  Import values rose from $2.6 billion in 1988 to $7.9 billion in 2009.

Chart B2.16
Canadian Fruits, Vegetables and Their Products*
Import Price and Volume Indexes
1988-2009



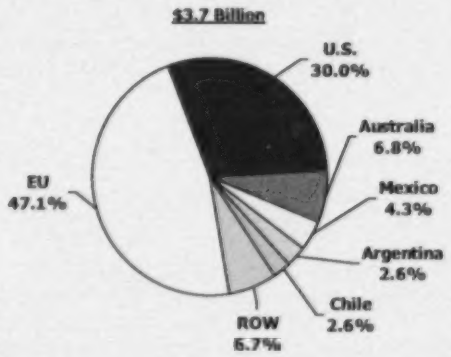
Source: Statistics Canada and AAFC calculations.
Note: *Includes fruit juice and other processed items.

Canadians imported more beverages in 2009 than in any of the previous 20 years, with imports coming primarily from the EU and the U.S.

- **The EU was the source of nearly half of all beverage (excluding fruit juices) imports in Canada in 2009, while the U.S. supplied another 30%.**

  Alcoholic products such as wine, beer and other liquors accounted for 80% of all beverage imports, with wine being by far the largest single contributor. Bottled water comprises most of the remaining 20%.

Chart B2.17
Canadian Beverage* Imports by Country of Origin
2009

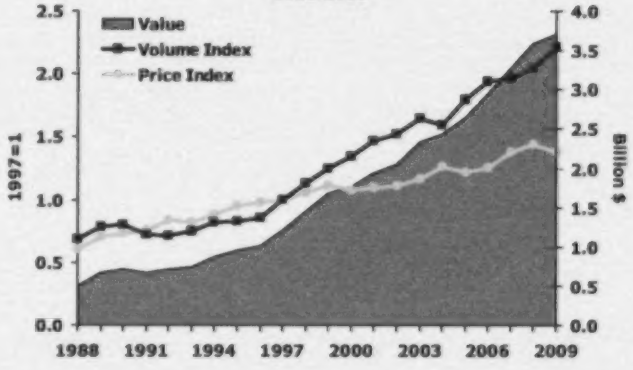


Source: Statistics Canada and AAFC calculations.
Note: *Excludes fruit juice.

- **The value of Canadian beverage imports has grown alongside import volumes since 1996.**

  Growth in import prices remained relatively constant over the entire period. Import values grew from $504 million in 1988 to $3.7 billion in 2009.

Chart B2.18
Canadian Beverage*
Import Price and Volume Indexes
1988-2009



Source: Statistics Canada and AAFC calculations.
Note: *Excludes fruit juice.

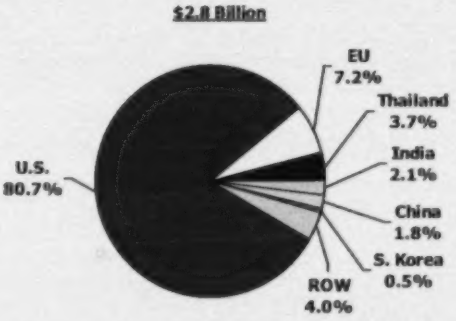
The majority of Canadian grains and grain product imports are from the U.S.

- **The U.S. is the primary source of Canadian grains and grain product imports, accounting for four-fifths of all import sales in 2009.**

  Imports from the U.S. were over ten times larger than the next-largest source, the EU.

  The largest item in this category by value is baked products, such as breads and cakes. The bulk of the remainder consists of processed grains, pastas, rice and corn.

Chart B2.19
Canadian Grains and Grain Product Imports by Country of Origin 2009

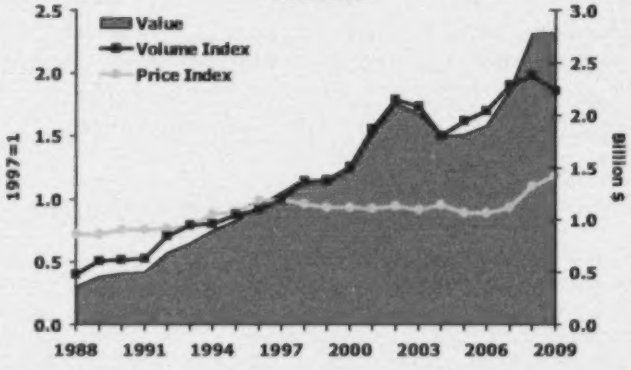


Source: Statistics Canada and AAFC calculations.

- **Canadian grains and grain product import values grew at roughly the same pace as import volumes between 1988 and 2005.**

  Slightly higher import prices between 2007 and 2009 further contributed to higher values of imports. Canadian imports of grains and grain products increased from $363 million in 1988 to $2.8 billion in 2009.

Chart B2.20
Canadian Grains and Grain Product Import Price and Volume Indexes 1988-2009



Source: Statistics Canada and AAFC calculations.

SECTION B3

R&D Investments in Primary Agriculture and Food Processing

INTRODUCTION:

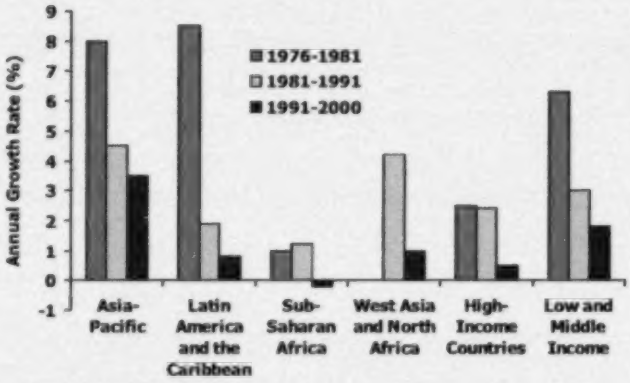
Investments in research and development (R&D) in agriculture and food processing as well as technological improvements are important for increasing productivity and competitiveness of the sector. They can also lead to the development of new products and processes that respond to changing consumer demands in global and domestic markets. Land is a finite resource and higher productivity can lead to higher crop yields. This section presents recent trends in agricultural and food processing R&D for Canada and other countries. It also presents research investment initiatives that have benefited the Canadian agriculture and agri-food sector.

Public R&D spending in agriculture around the world has played a key role in the development and adoption of new and improved crop varieties and livestock breeds

- **Past R&D investments led to improvements in agricultural inputs, including new crop varieties and livestock genetics, new feeding regimes and production methods.**

  The growth in public R&D expenditures in all countries has fallen over time. Between 1976 and 2000, average annual growth rates in public agriculture R&D spending have fallen significantly below those rates of the 1970s when large public sector investments in R&D in developed countries, in particular, led to the Green Revolution in Asia and Latin America.

Chart 83.1
Global Public Agricultural Research Expenditures by Region
1976-2000

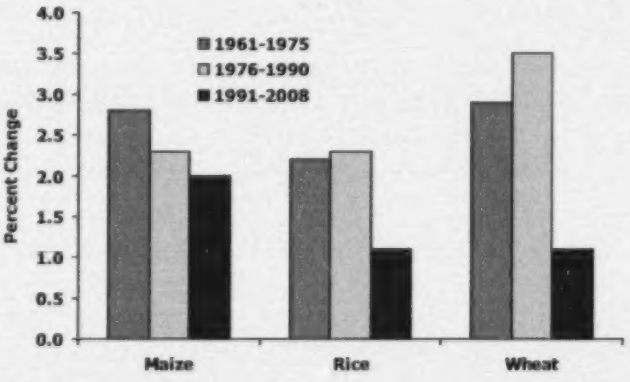


Source: Beintema and Stads, 2006 and 2008.

- **As an example, the rate of growth in crop yields rose dramatically as farmers adopted new varieties. Between 1961 and 1975 yields increased by an average annual rate of 2.8% for maize, 2.2% for rice and 2.9% for wheat.**

  However, the rate of growth in most crop yields using conventional technologies has slowed in recent years. Growth in world wheat yields, for example, fell to 1.1% per year between 1991 and 2008, as did rice, while growth in maize yields slowed to 2.0% on average over the same period.

Chart 83.2
World Crop Yields
1961-2008



Source: FAO.

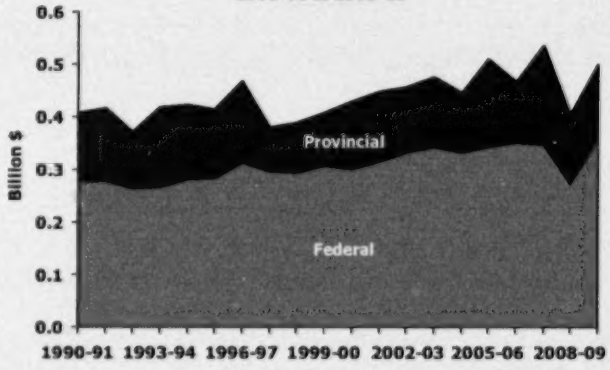
In Canada, publicly-funded R&D expenditures on agriculture and agri-food have been predominantly provided by the federal government

- **There has been an increasing trend in total publicly-funded research expenditures on the agriculture and agri-food sector over the last decade, with a peak of $536 million in the 2007-08 fiscal year.**

  In Canada, public research expenditures on agriculture and agri-food are predominantly provided by the federal government. On average, federal expenditures have accounted for 70% of total public research expenditures over the past ten years (2000-01 to 2009-10), with the provinces accounting for the remaining 30%.

  Over the past five years, a larger proportion of public R&D funding is being targeted to encourage partnerships with industry and academia and more applied research results.

Chart B3.3
Government Research Expenditures on Agriculture and Agri-Food 1990-91 to 2009-10

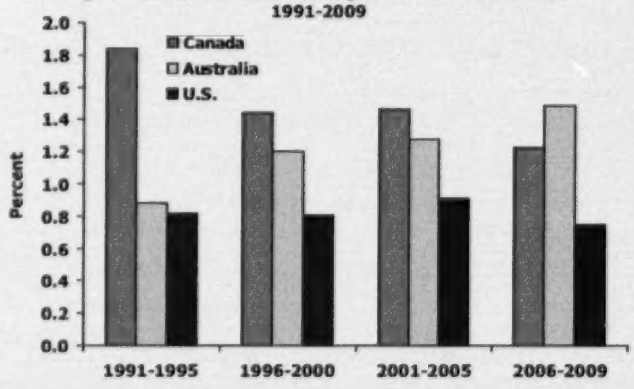


Source: AAFC.
Note: 2009-10 figures are estimates.

- **As a share of production, Canada's public sector spends more to support the agriculture and agri-food sector than does the U.S., but less than does Australia.**

  In Canada, this share has fallen over time, from 1.8% in 1991-1995 to 1.2% in 2006-2009. While the share the U.S. spends has remained stable over time at around 0.7%, Australia has boosted its spending in recent years to reach 1.5% of production in 2006-2009.

Chart B3.4
Public R&D Spending to Support the Agriculture and Agri-Food Sector as a Share of Adjusted Value of Production 1991-2009



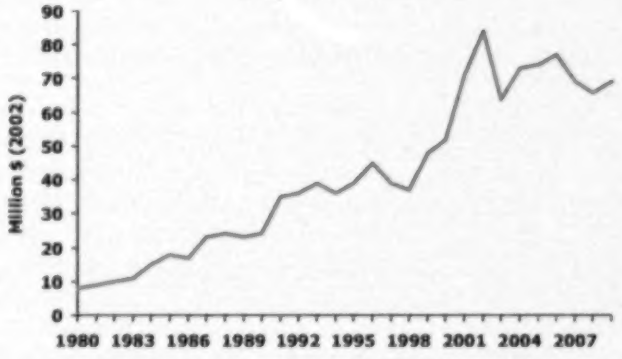
Source: OECD, "Agricultural Policies in OECD Countries: At a Glance, 2010".
Note: In order to improve comparability and consistency across countries, the OECD is currently undertak a study that will review its methodology for classifying these expenditures.

Increasingly, R&D investments in agriculture have been funded by the private sector particularly as a result of joint collaborations between producers, the public and the private sector

- **Private sector investments on R&D in agriculture have grown in real terms since the 1980s, and continued to grow through the 1990s after returns on investments were guaranteed through Intellectual Property Rights (IPR) protection on new crop inventions.** However, this data does not include private R&D expenditures by the chemical or machinery companies, which may be conducting R&D that benefits the agriculture sector.

  Real private sector R&D spending in the primary agriculture sector increased significantly between 1998 and 2002, but has slowed more recently. Private sector spending on primary agriculture averaged about $70 million between 2003 and 2009, down from a peak of $84 million in 2002.

Chart B3.5
Real Private Sector R&D in Primary Agriculture
1980-2009



Source: Statistics Canada and AAFC calculations.

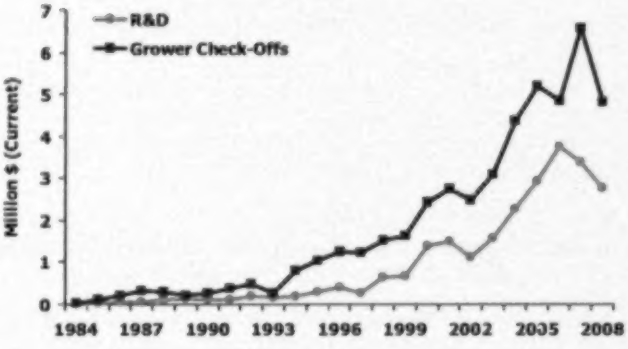
Note: 1) 2007-2009 figures are preliminary.
2) This includes all R&D expenditures (intramural) made by private industry regardless of whether the sources of funds were self-financed, government grants/contracts or from other companies.
3) This includes NAICS 111, 112 (except aquaculture) and 1151, 1152 (support activities).

- **Industry check-offs are one way in which producers have been able to finance and benefit from private sector investments in R&D in agriculture.**

  The primary mechanism for financing the activities of the Saskatchewan Pulse Growers (SPG) is a grower check-off scheme collected to fund pulse research for the benefit of all growers.

  The total amount derived from check-offs has grown substantially between 1984 and 2008. Annual check-offs averaged $196,000 between 1984 and 1988, and rose to an average of just over $5.1 million between 2004 and 2008.

Chart B3.6
Saskatchewan Pulse Growers R&D Expenditures and Check-Offs
1984-2008



Source: Gray et al., 2008.

Note: 1) Author's calculation based on Saskatchewan Pulse Growers (SPG) expenditure and revenue data.
2) Includes net research and development expenditure plus beginning in 1997 net expenditure on the variety release program.

NOTE(S):

Industry Check-Offs: Producer association check-off schemes are common sources of funding for R&D innovation, promotion and development of agriculture commodities. These schemes usually involve an annual assessment of marketings or sales, where the revenue is pooled by the grower organization and a percentage share or fixed amount levy is collected for these purposes.

Agriculture continues to reap large benefits from both public and private R&D investments

- **Genetic improvements, brought about by plant breeding, improved yields of various crops in Canada over time.**

  In particular, yields for western bread wheat varieties grew 16% between 1972 and 2006, as measured by an indexed adjusted wheat yield. Given that Canada is both a large producer and exporter of wheat, yield growth due to wheat breeding programs on the Prairies have contributed significantly to agriculture's competitiveness and prosperity.

Chart B3.7
Index Adjusted Wheat Yields
1972-2006

Source: Adapted from Galushko and Gray, 2008 and Statistics Canada.

- **Canada, like other countries, has experienced high rates of return to R&D in both the crop and livestock sectors.**

  For example, for wheat, the rates of return have been estimated between 43% and 53%. For other crops such as pulses, these rates have been estimated at around 40% over the period studied. Where rates of return are not available, benefit-cost ratios provide an indication of benefits, such as in the case of canola where a benefit/cost ratio of 6.65 was estimated.

Chart B3.8
Internal Rates of Return (IRR) to Canadian R&D in Agriculture
Various Years

	BENEFIT-COST RATIO	RATE OF RETURN
Wheat (Galushko and Gray, 2008)		43-53%*
(Goddard, Benkie and Boyd, 2008)	14.83	
Barley (Scott et al., 2005)	4.12	36.8%*
Pulses (Gray et al., 2008)**	26.91	39.5%*
Canola (Goddard, Benkie and Boyd, 2008)	6.65	—
Beef (Klein, Freeze and Fox, 1994)	30.40	—
Hogs*** (Thomas et al., 2001)	6.4-24.6	54-124%

Source: Various, see detailed sources.

Note: * Calculated jointly with producer check-off and public sector R&D funding for genetics/breeding. Estimates vary depending on the timeframe and market information used.
** These numbers are forecast.
*** High estimates include federal public R&D only, low estimates include all others sources.

NOTE(S):

Yield increases, attributable to genetic improvements, were calculated using the average weighted bread yield index (Galushko and Gray, 2008). This index isolates the impact of breeding on Prairie wheat yields. The index takes into account the share of wheat types (classes).

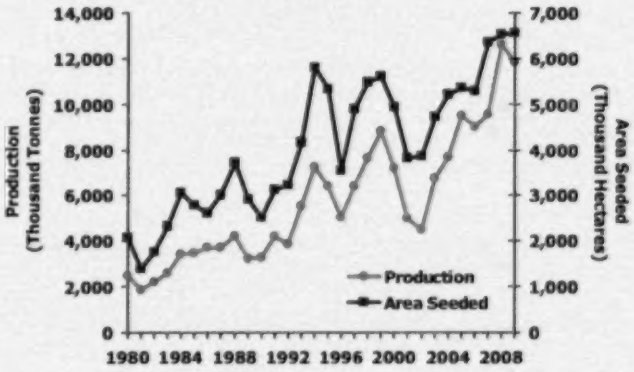
To illustrate the impact of breeding/genetics R&D on actual wheat yields, a base yield was set (average of non-durum spring wheat yields for the Prairies for 1970-1974). Yield was calculated by multiplying the base yield by each year's index value.

Innovation in primary agriculture takes place through the adoption of new crop varieties and livestock breeds, new machinery and equipment, or new business, production and marketing practices

- **The widespread adoption of new oilseed varieties such as canola, which was the result of public and private R&D spending in the 1970s, and led to substantial growth in production and area seeded.**

  Canola production and area seeded in 2009 was more than four times greater than in 1980, at more than 12 million tonnes of production and 6 million hectares seeded. Saskatchewan is the largest producer, with almost 50% of total Canadian canola production.

Chart B3.9
Canola Production in Canada
1980-2009

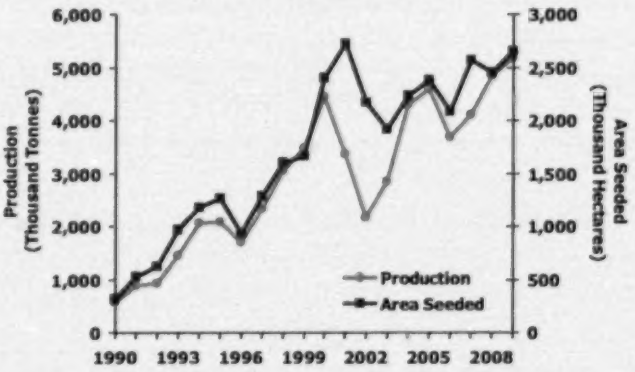


Source: Statistics Canada and AAFC calculations.

- **Similarly, innovation in the development of new pulse varieties, their widespread adoption on the Prairies, and innovative marketing techniques led to expanded production and exports to new growth markets such as India.**

  Production of pulse crops has risen dramatically since the early 1990s. Production of dry beans and lentils in 2009 was almost 9 times the levels produced in the early 1990s. Producers have also accelerated their production of peas and chickpeas since 1990. Saskatchewan has become a major world producer and exporter of pulse crops, accounting for 80% of pulse production in Canada in 2009.

Chart B3.10
Pulse Production in Canada
1990-2009



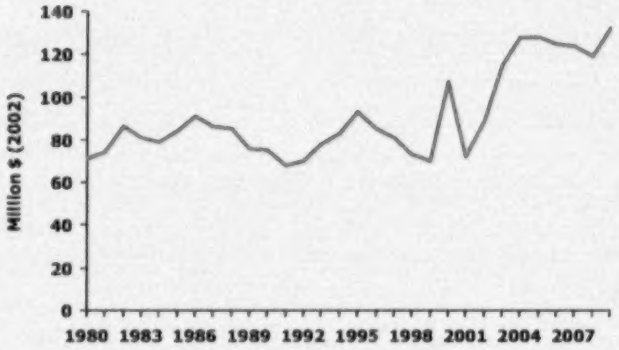
Source: Statistics Canada and AAFC calculations.

Private sector R&D expenditures by the food processing industry increased considerably since 2002

- **The food processing industry's R&D expenditures reached $132 million in 2009, based on preliminary estimates, up from an average of $80 million between 1980 and 1998.**

  Since 1980, the industry has introduced innovations in food safety and preserving processes (i.e. HACCP and flash freezing) as well as inventory control (i.e. just in time inventory).

Chart B3.11
Real Private Sector R&D Expenditures in Food Processing
1980-2009



Source: Statistics Canada and AAFC calculations.

Note: 1) 2007-2009 figures are preliminary.
2) This includes all R&D expenditures (intramural) made by private industry regardless of whether the sources of funds were self-financed, government grants/contracts or from other companies.

- **A small percentage of food processing establishments undertake their own R&D as a source of innovation.**

  Fifty-two percent of those food processing establishments which used at least one advanced technology undertook R&D activities within the organization. This is comparable to total manufacturing (54%).The next most important source of R&D for those establishments (46%) is through using operational personnel to develop new products/processes. Thirty-four percent of business units reported no involvement in R&D activities.

Chart B3.12
R&D Activities by Source
2005-2007

R&D ACTIVITIES UNDERTAKEN	FOOD MANUFACTURING	TOTAL MANUFACT. INDUSTRIES
	Percent	
Within your organization, by the business unit	52	54
On the business unit's behalf by other business units that are part of the larger firm to which the business unit belongs	18	17
By other business units that are part of the larger firm	11	10
By using operating personnel	46	45
Jointly with other business unit(s)	14	15
By contracting out	9	11
None	34	35

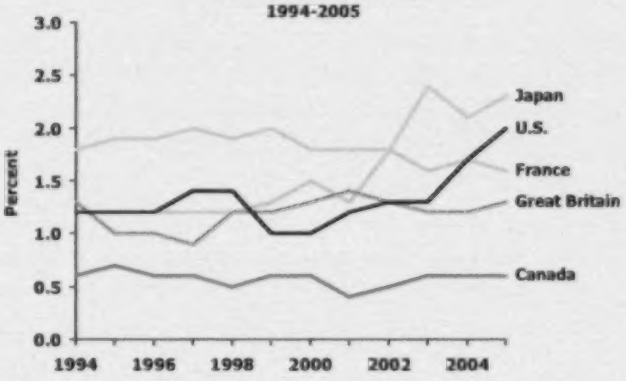
Source: Statistics Canada, Survey of Advanced Technology, 2007.

Relative to other countries, Canadian food and beverage processing industries tend to invest a much smaller share of their value of production on R&D, especially compared to the U.S. and Japan

- **Canadian food and beverage processing industries spent about 0.5% of value-added on R&D, while those in the U.S. allocated about 2% and Japan, 2.4%. Surveys show that less than 50% of food and beverage firms engage in original R&D.**

  Canadian food and beverage processing firms have nevertheless been making productivity gains. This low-level of R&D may be explained by the fact that Canadian firms benefit from R&D investments taking place in head offices outside Canada, or they are very efficient at adopting technologies developed by supply chain partners (e.g. packagers) outside the country.

Chart B3.13
Food and Beverage Industry R&D Expenditures as a Share of Value-Added
1994-2005



Source: OECD, STAN Indicators, 2009.

SECTION B4

Productivity Growth

INTRODUCTION:

Productivity growth is an important component of economic growth and the efficient use of resources. It is a key determinant of the competitiveness of the agriculture and agri-food sector.

This section introduces three inter-related economic concepts: growth in aggregate gross output, growth in aggregate input and growth in total factor productivity (TFP) as they apply to the agriculture and agri-food sector. Simply put, the three concepts are related as follows:

output growth = input growth + TFP growth

The first concept, growth in aggregate gross output, is essentially the same as economic growth, which can occur though growth in physical inputs or through growth in TFP. The notion that input growth results in output growth, subject to returns to scale, is straightforward. However, factors other than the physical inputs and outputs themselves may affect the efficiency with which inputs are transformed into outputs. It is precisely the growth in this transformation efficiency which is meant by growth in TFP.

Aggregate gross output is a measured as an index of gross output across all commodities produced within a sector. For any given commodity, gross output is defined as the sum of: sales to end-users outside of the sector; intermediate inputs produced within the sector and change in inventories. Equivalently, gross output is also defined as production less waste. The term "gross" refers to the fact that all end-uses are accounted for, not just end-uses outside of the sector. For instance, in primary agriculture, production may leave the sector as marketings or remain in the sector as inputs to primary agriculture, such as feed and seed. Agricultural production may also be stored as inventories, or stocks, to be utilized or marketed at a future date.

Aggregate input is a similar concept, only that the index is an aggregation occurring across all inputs used within a sector. In some cases, these inputs are intermediate in the sense that they are both produced and consumed within the primary agriculture sector.

A TFP index is the ratio of an output index to an input index. The word "total" in the term "total factor productivity" is a recognition that all inputs are accounted for in the input index rather than just, say, labour. The output and input indexes are expressed in terms relative to a common base year. It follows that a TFP index is also expressed relative to that base year. Productivity growth is then measured as the change in the TFP index over time.

The pace of economic growth in primary agriculture has been higher in Canada than in the U.S.

- **Economic growth is measured as growth in the quantity of gross output. Between 1961 and 2005, gross output in Canada for primary agriculture grew at an average annual rate of 2.2%, which was higher than the rate of 1.7% observed in the U.S. over the same period.**

Chart B4.1
Gross Output Quantity Indexes for Primary Agriculture in Canada and the U.S.
1961-2005

Source: AAFC and USDA.

- **Gross output growth in Canadian primary agriculture has been partly driven by growth in the quantity of primary inputs.**

  Input quantities for primary agriculture in Canada grew at an average annual rate of 0.8% between 1961 and 2005. In contrast, input quantities in the U.S. increased at a pace similar to that of Canada from 1961 to 1981, after which they declined at an average annual rate of 0.3%. As a result, U.S. input quantities declined by an annual average of -0.1% over the entire 1961 to 2005 period.

Chart B4.2
Input Quantity Indexes for Primary Agriculture in Canada and the U.S.
1961-2005

Source: AAFC and USDA.

Both input growth and TFP growth have contributed to economic growth in Canada, whereas the main driver of output growth in the U.S. has been TFP growth alone

- **TFP growth in primary agriculture averaged 1.4% per year in Canada, which was lower than the average annual rate of 1.7% growth observed in the U.S.**

  TFP growth rates in the two countries were quite similar over the entire period.

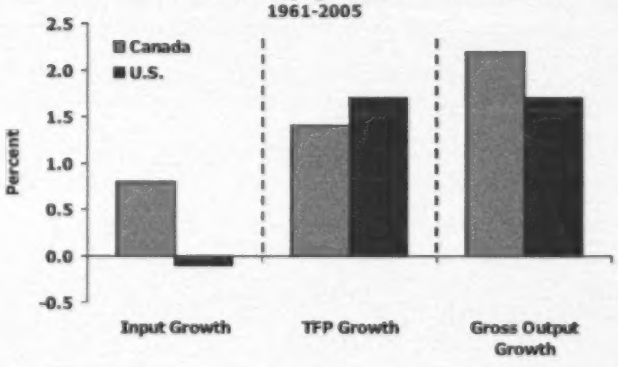
Chart B4.3
TFP Indexes for Primary Agriculture in Canada and the U.S.
1961-2005

Source: AAFC and USDA.

- **In Canada, TFP growth explains roughly two-thirds of economic growth in primary agriculture between 1961 and 2005, while input growth explains the remainder.**

  The Canadian story contrasts with the U.S., where average annual TFP growth has been somewhat higher than that in Canada, but input growth was negative. Thus, in the U.S., TFP growth has essentially been the sole source of economic growth in primary agriculture.

Chart B4.4
Average Annual Contributions of Input and TFP Growth to Gross Output Growth in Canadian and U.S. Primary Agriculture
1961-2005



Source: AAFC and USDA.

Higher relative economic growth has occurred in both live animals and their products and crops

- **Live animals and their products account for approximately 50% of the value of output in Canadian primary agriculture and 53% in the U.S.**

  Output quantities for live animals and their products grew at an average annual rate of 1.8% in Canada between 1961 and 2005, with the rate of growth increasing in the early 1990s relative to earlier decades. Annual growth in output in the U.S. averaged 1.1% over the entire period.

Chart B4.5
Gross Output Quantity Indexes for Live Animals and Their Products in Canada and the U.S. 1961-2005

Source: AAFC and USDA.

- **Crops account for roughly 40% of the output value of Canadian primary agriculture and 43% in the U.S.**

  Items in this category include cereals, oilseeds, fruits, vegetables and special crops. Output quantities of Canadian crops grew at an average annual rate of 2.6% between 1961 and 2005. This was a faster rate of growth than the 1.9% observed in the U.S.

Chart B4.6
Gross Output Quantity Indexes for Crops in Canada and the U.S. 1961-2005

Source: AAFC and USDA.

Much of the difference in relative input growth between Canada and the U.S. is related to different growth rates for energy, material and services and hired labour

- **The energy, materials and services category includes energy items such as fuel and electricity, material inputs such as feed, seed and intermediate livestock, farm chemicals such as fertilizers and pesticides and services such as custom work.**

  This category accounts for roughly 50% of all input costs in Canadian primary agriculture and 52% in the U.S. Input quantity growth for the energy, materials and services category in Canada averaged 2.7% between 1961 and 2005. In the U.S., growth of energy, materials and services inputs averaged 2.0% between 1961 and 1981 before slowing to 0.8% between 1982 and 2005.

Chart B4.7
Input Quantity Indexes for Energy, Materials and Services in Canada and the U.S. 1961-2005

Source: AAFC and USDA.

- **Canada and the U.S. exhibit quite different trends in the growth of hired labour over time. In Canada, the quantity of hired labour grew by roughly 1.7% per year between 1961 and 2005.**

  In contrast, the quantity of hired labour in the U.S. declined at an average annual rate of 1.5% over the same period. On average, between 1961 and 2005, hired labour represented about 7% of overall costs in Canadian primary agriculture and about 8% in the U.S.

Chart B4.8
Input Quantity Indexes for Hired Labour in Canada and the U.S. 1961-2005

Source: AAFC and USDA.

Productivity growth has been low in the Canadian food, beverage and tobacco industry, but has been consistently higher than that in the U.S.

- **TFP growth in the Canadian food, beverage and tobacco industry averaged about 0.1% annually between 1988 and 2006. In the U.S., TFP growth for food, beverage and tobacco averaged around -0.3% annually over the same period.**

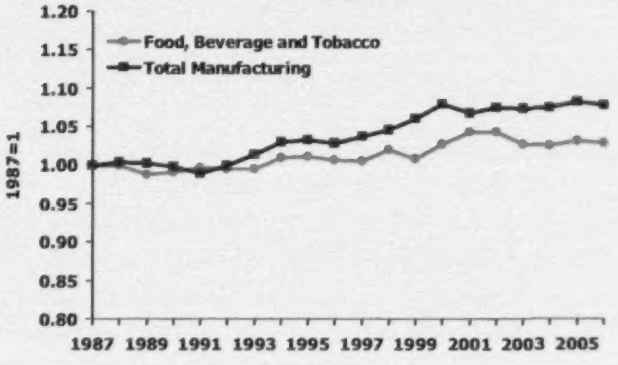
Chart B4.9
TFP Indexes for the Canadian and U.S. Food, Beverage and Tobacco Industries 1987-2006

Source: Statistics Canada and the U.S. Bureau of Labor Statistics.

- **Productivity growth in the food, beverage and tobacco industry has been consistently lower than that in total manufacturing.**

  Between 1988 and 2006, the average annual TFP growth rate for total manufacturing was 0.6% per year. This was considerably higher than that in the food, beverage and tobacco industry, which averaged only 0.1% per year.

Chart B4.10
TFP Indexes for the Canadian Food, Beverage and Tobacco and Total Manufacturing Industries 1987-2006



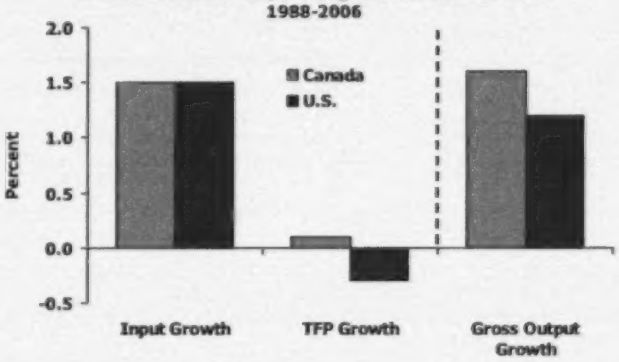
Source: Statistics Canada.

Low but positive TFP growth in the Canadian food, beverage and tobacco industry has meant higher gross output growth, relative to the U.S. food, beverage and tobacco industry

- **Canadian food, beverage and tobacco gross output grew by an average 1.6% per year between 1988 and 2006. While most of this growth was due to increases in inputs, which grew about 1.5% each year, some was due to low but positive productivity growth, averaging 0.1% annually.**

  The average annual increase in U.S. food, beverage and tobacco gross output, at 1.2% per year, was lower than that in Canada. The difference between the Canadian and U.S. output growth was almost entirely due to negative productivity growth in the U.S. (-0.3% annually), since U.S. input growth was almost the same as that in Canada.

Chart B4.11
Average Annual Contributions of Input and TFP Growth to Gross Output Growth in the Canadian and U.S. Food, Beverage and Tobacco Industries 1988-2006



Source: Statistics Canada and the U.S. Bureau of Labor Statistics.

SECTION C

Components of the Agriculture and Agri-Food System

Section C1

Consumers

Introduction:

The year 2009 was characterized by an economic slowdown that altered the personal disposable income situation and spending patterns of Canadian consumers. Per capita personal disposable income fell for the first time in many decades as unemployment rose sharply.

This led to consumers spending less on many durable items such as cars and appliances. However, spending on food, being a necessity, remained stable. Consumers did however switch from spending more on meals away from home, which tends to be more of a luxury, to purchasing food from stores and preparing their own meals.

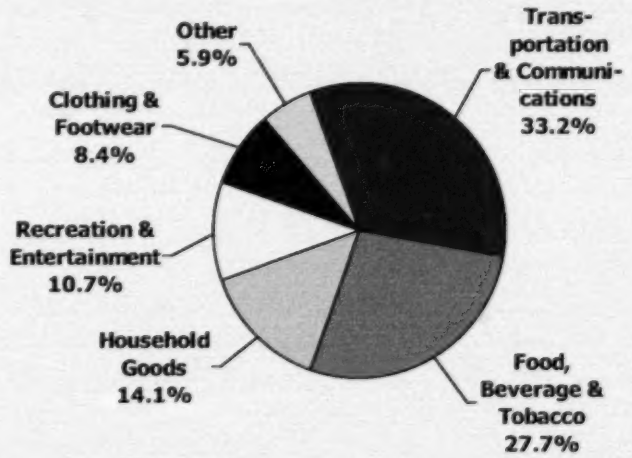
Canadian consumers are typical of consumers in developed economies. On average, they allocate a relatively small percentage of their total personal disposable income to food. In fact, for the average Canadian, the food expenditure share is declining to under 10%. Nevertheless, consumers are increasingly looking beyond staple foods to products with attributes that reflect their divergent preferences and values. In response to consumer demands, the food industry offers a variety of products which embody not only consumer preferences for convenience and health, but also process attributes such as those which address environmental, fair trade and animal welfare issues, among other things.

Canadian consumers spent about $167 billion on food from stores and meals away from home in 2009, in nominal terms

- **Food, beverage and tobacco expenditures represent the second-largest consumer goods expenditure category after transportation and communications.**

  In 2009, Canadians spent $115.6 billion (or 27.7% of their total personal expenditures on consumer goods) on food, beverage and tobacco products purchased from stores.

Chart C1.1
Distribution of Personal Expenditures on Goods
2009



Source: Statistics Canada.

Note:
1) Data is only for food purchased from retail stores, and does not include foodservice.
2) Household Goods include furniture, appliances, supplies and equipment.
3) Other Goods include drugs and pharmaceutical products and personal effects not elsewhere classified.
4) Due to rounding, total may not add to the sum of its components.

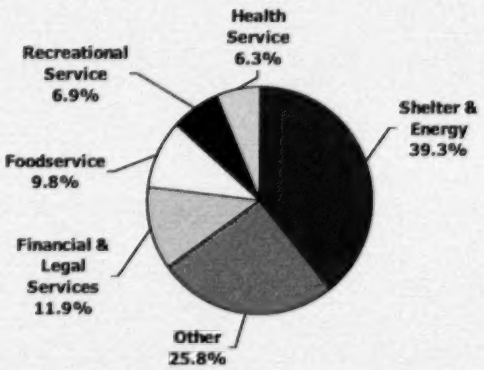
Canadian consumers were impacted by the economic recession in 2009 when real per capita personal disposable income fell for the first time in many decades

- **Foodservice is the third-largest consumer services expenditure category.**

  In 2009, Canadians spent $51.3 billion on foodservice, accounting for almost 10% of their personal expenditures on consumer services.

  Food expenditures at retail and foodservice establishments ($167 billion), accounted for approximately 12.8% of personal expenditures on consumer goods and services.

Chart C1.2
Distribution of Personal Expenditures on Services
2009



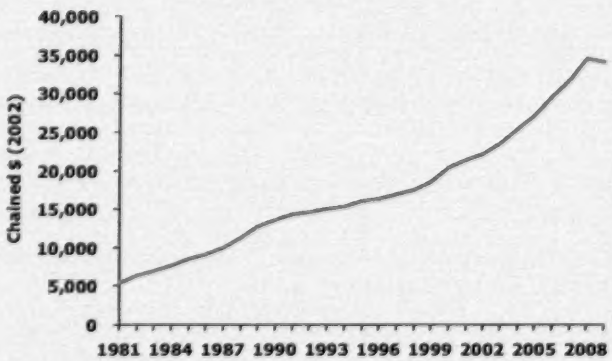
Source: Statistics Canada.

Note: 1) Other Service includes expenditures on accommodation services, personal care, household maintenance and childcare, education and cultural services, operating expenses of non-profit organizations and other auto-related services.
2) Due to rounding, total may not add to the sum of its components.
3) Foodservice numbers provided include meals eaten outside the home.
4) Estimations are based on current dollar as well as alcoholic beverages served in licensed establishments.

- **Real per capita personal disposable income fell from $34,554 in 2008 to $34,093 in 2009.**

  This is the first time in two decades that Canadians have experienced a drop in their disposable incomes. The economic recession in 2009 had a major negative impact on both job earnings and employment, which was down significantly.

Chart C1.3
Real Per Capita Disposable Income
1981-2009



Source: Statistics Canada and AAFC calculations.

The economic recession impacted spending on meals away from home more than retail food spending

- **Real personal expenditures on food fell slightly in 2009.**

  Total real personal spending on food purchased from stores rose to $69.4 billion from $68.5 billion in 2008, while spending on meals away from home fell to $35.1 billion from $36.5 billion in 2008. Consumers, hit by the recession, prepared more of their own meals in 2009.

  Real spending on food from stores was up despite the relatively large increase in retail food prices (up 4.9% over 2008).

  Approximately 34% of total food expenditures were spent on meals away from home, while 66% was spent on food purchased from stores. These are effectively the same shares of consumers' food budgets allocated to each category in 2008.

Chart C1.4
Real Personal Expenditures on Food
1981-2009

Source: Statistics Canada and AAFC Calculations.

- **On a per capita basis, spending on food declined slightly to $3,100 in 2009 from $3,147 in 2008, reflecting the decline in meals away from home.**

  Real per capita spending on food has increased over time from $2,636 in 1981 to $3,100 in 2009. At the same time, the share of consumers' budgets allocated to food has fallen from 17.4% in 1981 to 12.8% in 2009.

Chart C1.5
Per Capita Expenditures on Food
as a Share of Total Personal Expenditures
1981-2009

YEAR	TOTAL FOOD SPENDING	POPULATION	PER CAPITA FOOD EXPENDIT.	FOOD EXP. AS % OF TOTAL CONSUMER SPENDING
1981	65,425,000,000	24,819,915	2,636	17.4
1991	75,392,000,000	28,037,420	2,689	15.8
2001	94,742,000,000	31,019,020	3,054	15.0
2008	104,876,000,000	33,327,337	3,147	12.9
2009	104,605,000,000	33,739,859	3,100	12.8

Source: Statistics Canada and AAFC calculations.
Note: Chained 2002 $.

The share of household expenditures allocated to food varies by income class

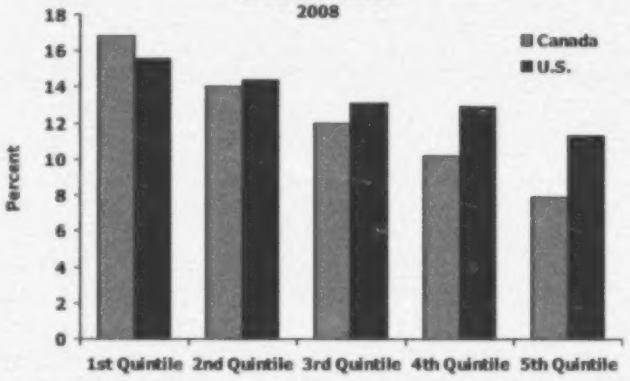
- **Canadian households in the highest income class tend to allocate a smaller share to food than their American counterparts. The opposite is true for the lowest income class.**

  In 2008, the top 20% of Canadian households with the highest income (5th quintile) allocated only 7.9% of their budgets to food, and this compares to 11.3% for households in the same income class in the U.S.

  For households in the lower income classes, the budget share allocated to food was more comparable in Canada and the U.S., with the second quintile spending an almost identical share on food in Canada as in the U.S. at 14% and 14.4%, respectively.

  Canadian households with the lowest income (1st quintile) allocated a higher share to food (16.8%) than did their American counterparts (15.7%).

Chart C1.6
Share of Household Food Expenditures by Income Quintile* in Canada and U.S.
2008



Source: Statistics Canada, U.S. Bureau of Labor Statistics and AAFC calculations.

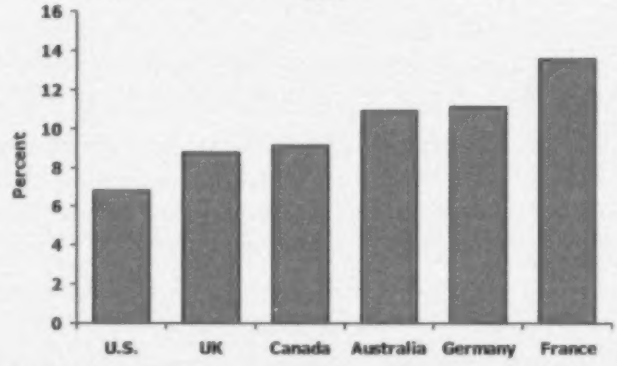
Note: * Quintile: Households are ranked in ascending order by total household income and are divided into five equal groups. The 1st quintile is the lowest 20% of households and the 5th quintile is the highest 20% of households.

- **While Canadian households are generally typical of those in developed economies, they still allocated a relatively smaller share to food and non-alcoholic beverages than some other countries.**

  Canadians allocated a smaller proportion of their personal disposable income to food and non-alcoholic beverages compared to those in other OECD countries. In 2008, Canadian households allocated about 9.1% of their personal disposable income to food and non-alcoholic beverages. Canada's share was, however, slightly more than the UK (8.8%), but substantially lower than France (13.6%) and Germany (11.1%). Consumers in the U.S. allocated the lowest share to food at 6.8%.

  Generally, in emerging economies such as Brazil and China, food accounts for a much higher share of the household budget, at 24.6% and 34.9%, respectively in 2007.

Chart C1.7
Share of Household Expenditures on Food and Non-Alcoholic Beverages in Selected OECD Countries
2008



Source: OECD.

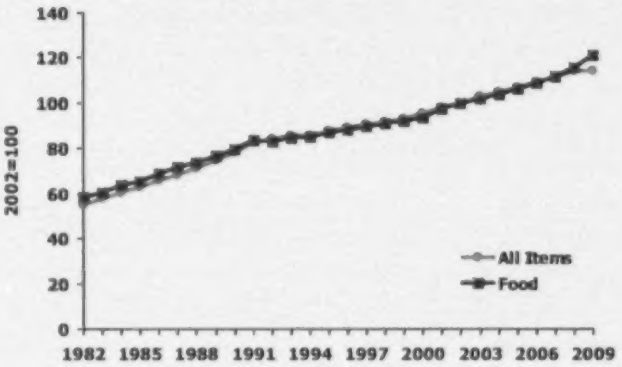
Retail food price inflation in Canada was up in 2009, significantly above the overall rate of inflation

- **Food price inflation has generally kept pace with overall consumer price inflation over the past several decades.**

  However, in 2009, food prices rose much more sharply at an annual average rate of 4.9%, compared to overall prices, which rose only marginally (0.3%).

  A dramatic fall in energy prices in 2009 contributed to the marginal increase in overall prices, relative to food prices.

Chart C1.8
Consumer Price Indices (CPI) for Food and All Items
1982-2009



Source: Statistics Canada.

- **In 2009, retail food prices rose 4.9% over the previous year due to higher prices for most major food categories.**

  Prices for both food from stores (5.5%) and restaurants (3.5%) were up significantly in 2009.

  Retail prices for beef, pork, fresh fruits and vegetables were substantially higher in 2009 than in 2008. The rate of growth in bakery and cereal products slowed considerably between 2008 and 2009 from 12.1% to 4.2%, respectively.

Chart C1.9
Canadian Retail Food Price Inflation by Category
2008 and 2009

CATEGORY	INFLATION (%)	
	2008	2009
Overall CPI	**2.3**	**0.3**
Food	**3.5**	**4.9**
Food Purchased From Stores	**3.9**	**5.5**
Beef Fresh or Frozen	2.0	5.8
Pork Fresh or Frozen	1.4	3.6
Poultry Fresh or Frozen	3.5	4.2
Dairy Products	3.9	3.6
Eggs	4.1	1.7
Bakery and Cereal Products	12.1	4.2
Fresh Fruit	1.6	6.3
Fresh Vegetables	1.4	9.6
Sugar and Confectionery	2.4	7.4
Fats and Oils	13.6	8.4
Food Purchased From Restaurants	**2.5**	**3.5**

Source: Statistics Canada and AAFC calculations.

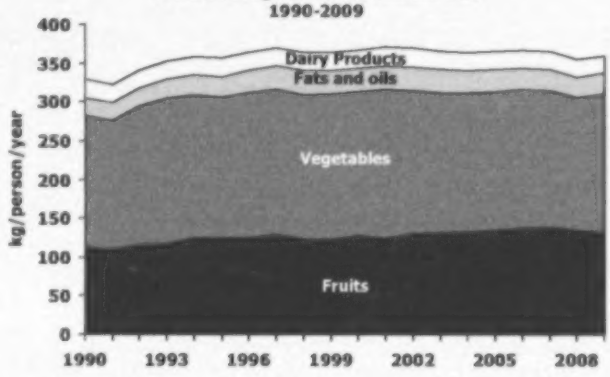
Canadian food preferences continue to change and include more fresh vegetables, yogurts, cheeses, creams and fewer fats and oils and meats

- **In 2009, total vegetable consumption saw the greatest increase to 179 kg per person.**

  On the other hand, fruit consumption decreased by almost 1% from 2008 to 132 kg per person. Fats and oils and dairy product consumption remained fairly constant.

  Canadian consumption of fats and oils from butter and margarine declined by about 38% between 1981 and 2009, while salad oil consumption increased by significantly (214%) to 11.82 kg per person in 2009. In the dairy category, Canadians significantly increased their consumption of cheese (up 45%) and cream (up 101%) between 1981 and 2009.

Chart C1.10
Per Capita Consumption of Dairy Products, Fruits and Vegetables and Fats and Oils
1990-2009



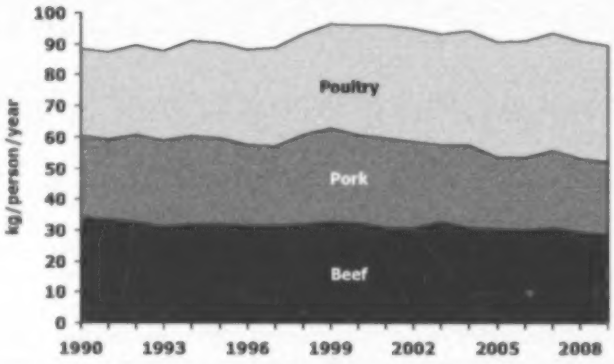
Source: Statistics Canada and AAFC calculations.

Note: Does not allow for losses, such as waste and/or spoilage in stores, households, private institutions or restaurants or losses during preparation.

- **In 2009, poultry consumption decreased for the first time since 2003, by almost 1% from the previous year. In general, poultry consumption has been increasing over time, rising from 28.15 kg per person in 1990 to 37.66 kg per person in 2009.**

  Beef consumption, which has been on a relatively steady trend downward since 1990, reached 28.6 kg per person in 2009. Pork consumption has also been trending downwards since 2000 and reached 23.36 kg per person in 2009.

Chart C1.11
Per Capita Consumption of Beef, Pork and Poultry
1990-2009



Source: Statistics Canada and AAFC calculations.

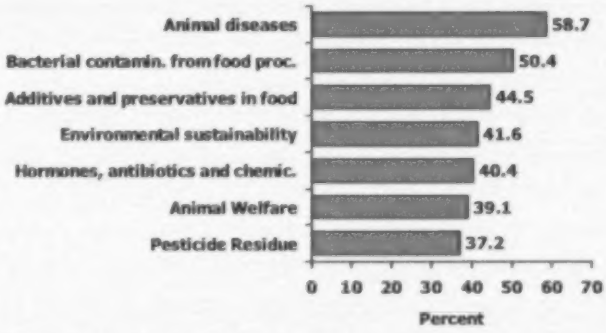
Note: 1) This does not adjust for losses such as waste and/or spoilage in stores. These data represent food available for consumption and not actual quantities of food consumed since they do not allow for losses such as waste and/or spoilage in stores, households, private institutions or restaurants.
2) In retail weight.

Canadian consumers base their food choices on a variety of issues

- **According to a 2010 study commissioned by AAFC, Canadian consumer confidence in the food system varies by issue.**

  For example, in 2010 almost 60% of respondents reported that they were "very" or "somewhat" confident in the Canadian food system's management of animal diseases (e.g. BSE). A relatively large percentage was also highly confident in the management of bacterial contamination for food processing (e.g. listeriosis). However, a smaller percentage was confident in the Canadian food system's management of animal welfare (39%) and pesticide residue (37%).

Chart C1.12
Percentage Responding "Very or Somewhat Confident" in the Canadian Food System in Managing the Following Issues 2010



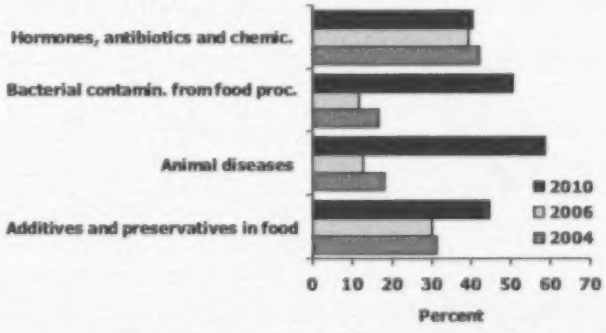
Source: Consumer Perceptions of Food Safety and Quality Survey, 2010 (AAFC).

- **Canadian consumer confidence in the Canadian food system in managing several food issues improved over the 2004 to 2010 period.**

  The percentage of respondents who reported confidence in the ability of the Canadian food system to manage animal disease and bacterial contamination in food processing rose from around 20% to 60% and 50%, respectively between 2004 and 2010.

  However, over the same period, there were no significant gains made in improving respondent's confidence in the Canadian food system's management of hormones, antibiotics and chemicals.

Chart C1.13
Percentage Responding "Very or Somewhat Confident" in the Canadian Food System in Managing the Following Food Safety Issues 2004, 2006 and 2010



Source: Consumer Perceptions of Food Safety and Quality Survey, 2004, 2006 and 2010 (AAFC).

However, when it comes to grocery shopping or dining out, Canadians still look for "best value for money"

- **While Canadian consumers were increasingly looking for new product attributes, they still valued "best value for money spent" (86.7%) when grocery shopping or dining out, in 2010.**

  Regarding product attributes, a larger percentage of respondents reported looking for the highest quality available (73.2%), nutritional value (72.1%), country of origin (64.9%), product of Canada (59.5%) and locally-produced (57.7%).

  A smaller percentage of respondents reported looking for environmentally-responsible production (31.3%), organics (18.4%) and ethical standards of production, such as vegetarian (6%) and halal (3.5%).

Chart C1.14
Percentage Responding "Always or Often Look" for the Following Food Attributes When Grocery Shopping or Dining Away from Home
2010

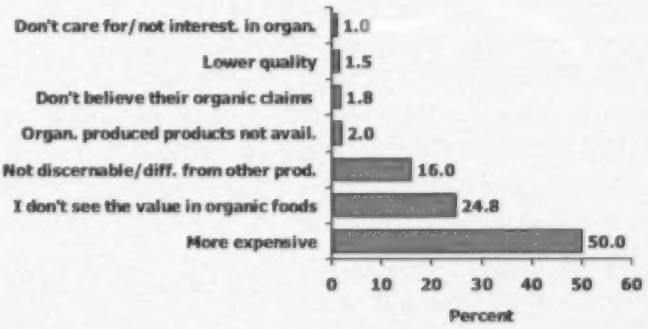
FOOD ATTRIBUTES	% RESPONDENTS
Origin/Brand Category	
Locally Produced	57.7
Product of Canada	59.5
Reputation of Brand/Product Source	61.3
Amount of Imported Ingredients	63.1
Country of Origin	64.9
Product Attributes	
Highest Quality Available	73.2
Best Value for Money Spent	86.7
Nutrition Value	72.1
Convenience	50.1
Health Claims	45.4
Ethical/Production Attributes	
Environmentally-Responsible Production	31.3
Organic Production	18.4
Free Range	5.5
Feed Related (Grass or Grain Fed)	-7.4
Fair Trade	-20.3
Hormone or Antibiotic Free	-33.2
Ethnic Lifestyle Standards	
Halal	3.5
Kosher	4.3
Vegan	5.2
Vegetarian	6.0

Source: Consumer Perceptions of Food Safety and Quality Survey, 2010 (AAFC).

- **The most important reason given why consumers rarely or never looked for or bought organic products was due to their expense (50%) and lack of perceived value (24.8%).**

  Only a small percent of respondents reported that the main reason they did not buy organics was because they did not believe their organic claims (1.8%).

Chart C1.15
Percentage (from the Respondents "Who Rarely/Never Look" for Organic Products) Responding the Main Reason for not Buying Organic Food Products
2010



Source: Consumer Perceptions of Food Safety and Quality Surveys, 2010 (AAFC).

For products such as locally-produced food, survey respondents based their purchase decision making on several factors

- **The main reason given for looking to purchase locally-produced food was to support the local economy.**

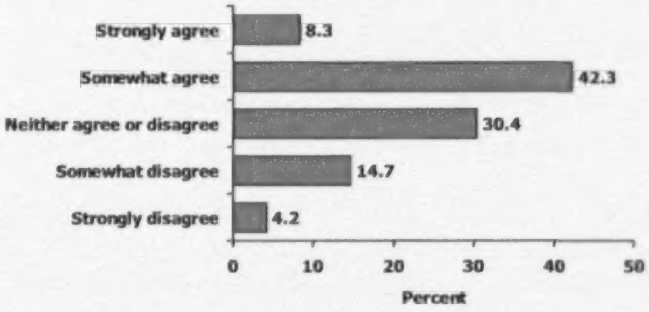
  Slightly more than half of respondents reported that supporting the local economy was the main benefit of purchasing local food. The next most important reason (slightly less than one-third) was freshness. Only a small percentage of respondents reported that such products are safer (2.5%) or tastier (7.8%) as the main benefit of local food. Only 7% reported that locally-produced food has less environmental impacts as the main benefit.

Chart C1.16
Percentage (from the Respondents "Who Often/Always/ Sometimes Look" for Locally-Produced Food) Responding "the Most Important Benefit" of Locally-Produced Foods
2010

Source: Consumer Perceptions of Food Safety and Quality Surveys, 2010 (AAFC).

- **More than half of respondents looking to purchase locally-produced food reported that they were willing to pay more for it (8.3% strongly agree and 42.3% somewhat agree).** Less than one-fifth of respondents reported not being willing to pay more for these food products.

Chart C1.17
Percentage (from the Respondents "Who Often/Always/ Sometimes Look" for Locally-Produced Food) Responding "When Grocery Shopping, I am Willing to Pay More for Products That are Locally-Produced"
2010



Source: Consumer Perceptions of Food Safety and Quality Surveys, 2010 (AAFC).

SECTION C2

Food Distribution (Retail/Wholesale and Foodservice)

INTRODUCTION:

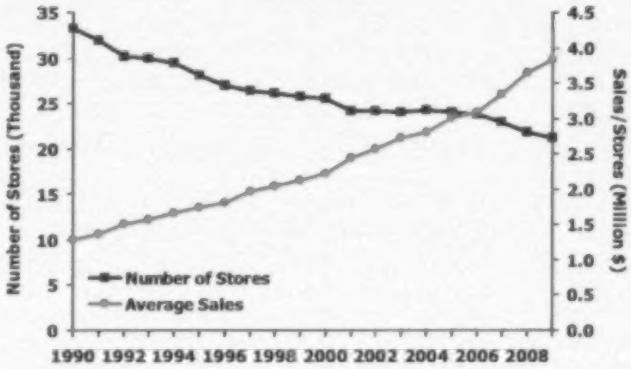
Food retail, wholesale and foodservice industries are major components of Canada's agriculture and agri-food system. Food retailers are on the front lines, responding to changing consumer demands, a changing marketplace and changing players (e.g., Walmart). They have been doing this by restructuring to maintain or increase their market share, while forming alliances and networks with upstream suppliers in the supply chains. Foodservice establishments also continue to adjust product and service offerings to increase sales in response to a fiercely competitive restaurant sector. They also face competition from food retailers who are offering consumers convenience with an increasing variety of prepared foods and take-home meals.

Food retailing continues to consolidate

- **Significant store rationalization has occurred during the past decade, with a move to larger operations.**

  Traditional supermarket chains have consolidated as they have faced increasing competition. In 2009, the total number of food stores continued to decline, down by 563 stores, to 21,242. The three-largest food retailers in Canada are Loblaw Cos. Ltd. ($30.7 billion in sales) with 1,029 stores across the country, Sobeys Inc. ($14.8 billion) with more than 1,300 stores, and Metro Inc. ($11.2 billion) with 559 stores in Ontario and Quebec.

Chart C2.1
Number of Canadian Food Stores and Average Sales
1990-2009*

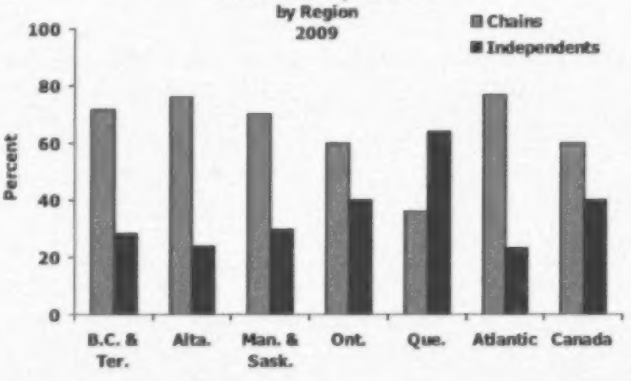


Source: Canadian Grocer, Statistics Canada and AAFC calculations.
Note: *2009 figures are estimates.

- **Supermarket chains dominate food store sales in all provinces except Quebec.**

  There are only two pan-Canadian grocery store chains in Canada, Loblaw Cos. Ltd. and Sobeys Inc. Overall, 60% of retail food sales are from grocery store chains. However, the dominance of chains as a percentage of sales varies greatly by province. Chains are most important in the Atlantic Provinces (76.9%) but much less important in Quebec (36.2%). In 2009, chains saw a slight reduction of their share in eastern Canada but increased their share slightly in western Canada.

Chart C2.2
Share of Canadian Food Store Sales
Chains vs. Independents
by Region
2009



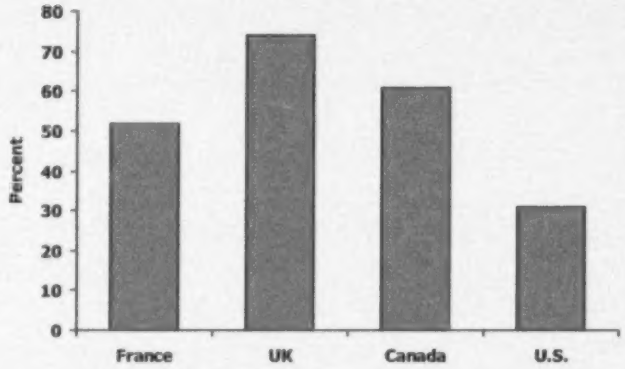
Source: Canadian Grocer, February 2010.

The market share of the top four Canadian food retailers is higher than in the U.S. but lower than in the UK

- **The four largest food retailers in Canada accounted for about 61% of national grocery sales.**

  The UK had higher levels of retail food store concentration than Canada at 75% of sales, while the U.S. and France had lower levels overall. However, on a regional basis, food retail concentration in the U.S. is high.

Chart C2.3
Market Share of Top Four Retailers in Selected Countries
2009



Source: TNS (UK), AC Nielsen (Canada), L'expansion.com (France), U.S. Census Bureau (U.S.) from CIBC World Markets Retail Conference Presentation, March 2009.

- **The profit margins of Canadian food and beverage retailers continue to remain below those of all retailers, although the gap narrowed in 2009.**

  Up until 2005, profit margins of non-food retailers were below those of food and beverage retailers, but have since risen above them. This reflects the increase in competition from non-food retailers such as Walmart, drug stores and others. Since 2000, the profit margins of food and beverage retailers have averaged just under 3% annually.

Chart C2.4
Average Profit Margin Ratio*
for Food and Beverage Retailers
1999-2009

Source: Statistics Canada, Quarterly Financial Statistics for Enterprises.

Note: *See Glossary for definition of the profit margin ratio and non-financial industries. Does not include government-controlled co-operatives, for example LCBO, SAQ.

The share of food, soft drink and non-alcoholic beverage sales from general merchandise stores continues to increase, while those from food and beverage stores continues to decline

- **General merchandise stores, gas stations and drug stores are increasingly selling food items, while traditional food and beverage stores have expanded their non-food sections.**

  In 2009, sales of food and beverages at general merchandise stores accounted for 11.3% of the total food and beverage sales market, up from 7.6% in 1999.

  Food and beverage sales in general merchandise stores grew at an average annual growth rate of 11% during the past 5 years, well above the 4% average growth rate experienced in food and beverage stores.

Chart C2.5
Food and Beverage Sales by Food Retail Channel
1999 vs. 2009

RETAIL CHANNEL	1999	2009
	PERCENT	
Food and Beverage Stores	87.8	84.2
General Merchandise Stores	7.6	11.3
Gas Stations and Automotive Dealers	2.5	2.7
Drug Stores	1.7	1.5
Other	0.4	0.3

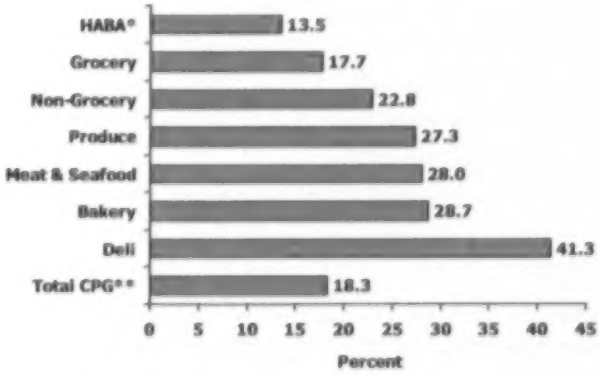
Source: Statistics Canada, Quarterly Retail Commodity Survey.

- **In 2009, private label products continued to account for a significant share (18%) of total grocery sales in Canada. Unlike in the U.S., private label products did not grow in importance in Canada during the recession.**

  Private label brands accounted for a higher share of sales in the deli, bakery and meat and seafood departments of grocery stores at 41.3%, 28.7% and 28%, respectively. Private label brands grew more than name brand products in the produce department, which grew by 13%.

  Development of private label products remains a key competitive strategy for large retailers to attract and retain customers. Loblaw Cos. Ltd. launched 800 new private label products in 2009, with sales of private label products accounting for 25% of total sales. The main private label brands for Loblaw are "President's Choice" and "No-Name" which, according to the Nielsen Company, are the two largest consumer packaged goods brands in Canada, based on sales.

Chart C2.6
Private Label Share of Grocery Sales by Department
2009



Source: Nielsen MarketTrack, National All Channels, 52 weeks to March 13, 2010.

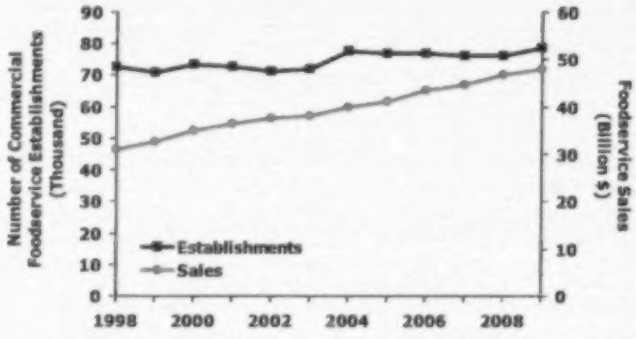
Note: * Health and Beauty Aids (HABA).
** Consumer Packaged Goods (CPG).

Foodservice and restaurant sales continue to grow and bankruptcies remain low

- **Commercial foodservice sales have increased by 48% over the last decade, while the number of establishments has stabilized, growing on average by 1% per year.**

  Commercial food sales were valued at $48 billion in 2009, representing a 2.9% increase over 2008. In 2009, there were around 78,600 commercial foodservice establishments in Canada; 6% in the Atlantic Provinces, 23% in Quebec, 40% in Ontario, 16% on the Prairies and 15% in British Columbia.

Chart C2.7
Commercial Foodservice Sales and Number of Establishments
1998-2009



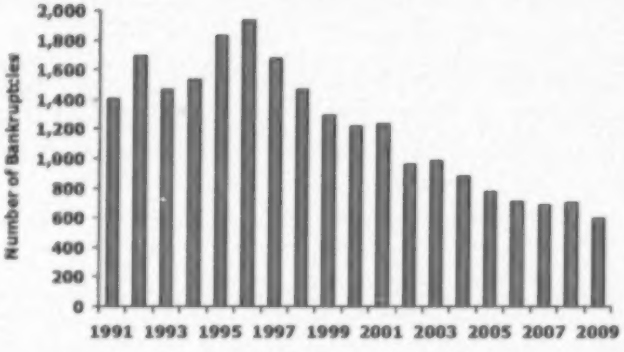
Source: Statistics Canada.

- **Commercial restaurant bankruptcies fell by 15% in 2009 compared to 2008.**

  The number of bankruptcies declined considerably and fairly consistently over the last decade or so, from a high of 1,933 per year in 1996 to 595 in 2009. Bankruptcies tend to be a lagging economic indicator.

  Full-service restaurants, which account for 45% of total commercial establishments, also accounted for 7 out of 10 commercial foodservice bankruptcies in Canada in 2009. This is primarily due to their higher labour costs and lower profit margins.

Chart C2.8
Commercial Restaurant Bankruptcies
1991-2009



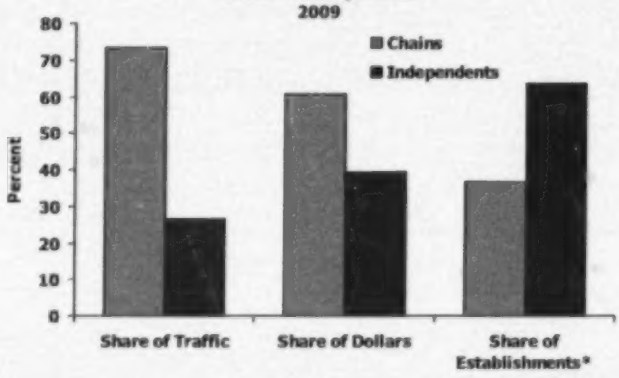
Source: Canadian Restaurant and Foodservices Association, Quarterly InfoStats.

Independent restaurants outnumber chain restaurants, but account for a smaller share of total sales and customer traffic

- **There are about twice as many independent restaurants as there are chain restaurants in Canada. However, independent restaurants account for only 39% of total sales and 27% of customer traffic.**

  In 2009, chain sales at restaurants grew by a modest 0.3%, while sales at independent restaurants declined by 3.2%. In 2008, the top 50 foodservice companies accounted for 48% of industry sales and about 27% of establishments.

Chart C2.9
Foodservice Market Share
Chains vs. Independents
2009



Source: Canadian Restaurant and Foodservices Association.
Note: *Data refers to chain and independent foodservice sourced from restaurants and retail stores.

Canadians spent less on restaurant meals compared to last year

- **Overall, when Canadians eat out, they tend to prefer more to less service. More than one-third (35%) of all sales in commercial foodservice occurs at full-service restaurants.**

  However, in 2009 the difficult economic conditions negatively affected most foodservice channels, with accommodation foodservice sales being impacted the most (-6.4%). Limited-service restaurants and other foodservices were the exceptions with growth of 1.6% and 3.1% in sales, respectively. Total foodservice sales decreased by 1.2% (i.e., commercial and non-commercial foodservice) and were estimated at $58.3 billion in 2009.

Chart C2.10
Market Share by Foodservice Category
2009

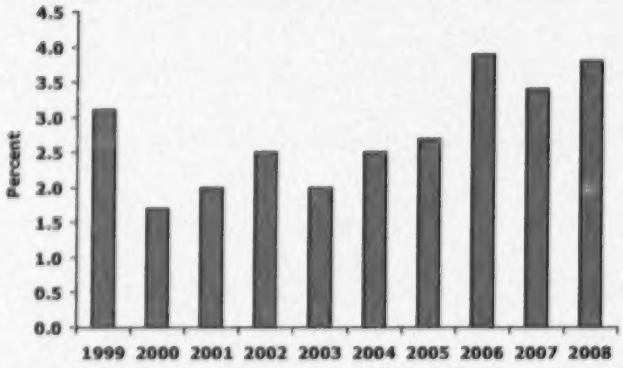
2009 PRELIMINARY	(MILLION $)	PERCENT
Commercial Foodservice	**46,132**	**79**
Full-Service Restaurants	20,126	35
Limited-Service Restaurants	19,837	34
Contract and Social Caterers	3,686	6
Pubs, Taverns and Nightclubs	2,483	4
Total Non-Commercial Foodservice	**12,187**	**21**
Accommodation Foodservice	5,294	9
Other Foodservice*	6,893	12
Total Foodservice	**58,319**	**100**

Source: Canadian Restaurant and Foodservices Association and AAFC calculations.
Note: 2009 figures are preliminary.
*Includes institutional, retail and other foodservices.

- **In 2008, profit margins increased slightly for foodservice and drinking establishments.**

  Foodservice and drinking establishments saw an increase in average profit margins, from 3.4% in 2007 to 3.8% in 2008, following a decline in 2007. Prior to 2007, profit margins for foodservice and drinking establishments had been growing steadily throughout most of the decade, from a low of 1.7% in 2000 to a high of 3.9% 2006.

Chart C2.11
Profit Margins for Foodservice and Drinking Establishments
1999-2008



Source: Statistics Canada, Financial and Taxation Statistics for Enterprises, Annual.

NOTE(S):

The foodservice and drinking establishments subsector, according to Statistics Canada, comprises establishments primarily engaged in preparing meals, snacks and beverages to customer order for immediate consumption on and off the premises. This subsector does not include foodservice activities that occur within establishments such as hotels, civic and social associations, amusement and recreation parks, and theatres. However, leased foodservice locations in facilities such as hotels, shopping malls, airports and departments stores are included. The industry groups within this subsector reflect the level and type of service provided.

Institutional foodservice is another major component of the foodservices sector

- **The institutional foodservice market was valued at $6.1 billion in 2008, approximately 10% of total foodservices. Revenues from institutional foodservice by managed service providers accounted for $2.9 billion (or 47% of the institutional market) and are reported under contract and social caterers in the commercial foodservice segment. Institutional foodservice that is self-operated, accounted for $3.2 billion (or 53%), and is reported under other foodservices in the non-commercial foodservice segment.**

The institutional foodservice market includes: healthcare (e.g., hospitals, long-term care facilities, and retirement homes), education (e.g., private schools, high schools, colleges and universities), military, transportation (e.g., airlines, trains, ferries, cruise lines, and coast guard), corrections (provincial and federal correctional facilities), remote foodservice and employee foodservices.

Healthcare institutions account for 48% of the institutional foodservice market, and are largely self-operated (78%). Other institutional sectors such as remote foodservice and employee foodservice are more dependent on managed service providers (about 90%).

Significant providers of institutional services include Compass Group Canada, Aramark Canada and Sodexo, Inc.

Chart C2.12
Institutional Foodservice Market
2008

Source: Canadian Restaurant and Foodservices Association, 2009 Institutional Foodservice Market Report.

SECTION C3

Food and Beverage Processing

INTRODUCTION:

The domestic food and beverage processing industry is the link between farmers, retailers, foodservice and domestic and global consumers. This link has become increasingly dynamic as food and beverage processors integrate with both farmers and retailers (domestically and abroad) to provide consumers with the products they demand. The Canadian food and beverage processing industry has faced challenges arising from exchange rate and commodity price volatility, tight labour markets, and the recent global economic recession.

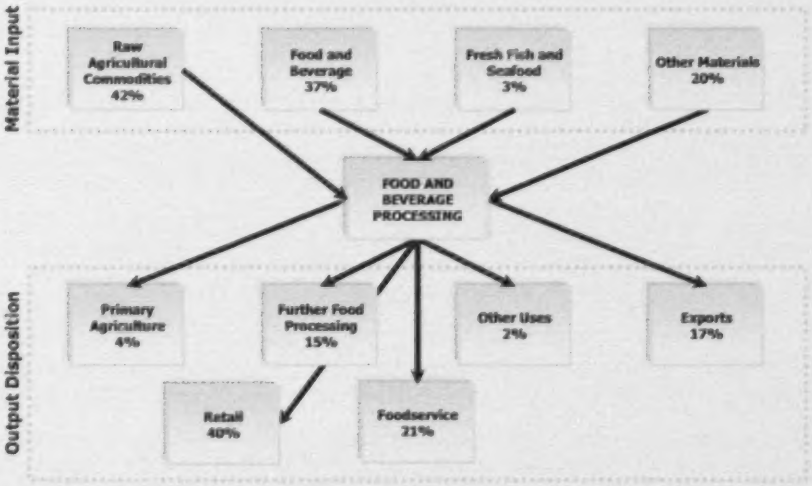
Food and beverage processing is a large, diverse component of the agriculture and agri-food system that plays a key role in transforming agricultural commodities into food, feed and non-food products that are sold in Canada and around the world

- **Agricultural commodities make up 42% of the total value of material inputs into food and beverage processing.**

  Food and beverage products that are already processed make up another 37%, while fresh fish and processed seafood account for another 3% of material inputs. The remaining 20% of material inputs is largely made up of packaging materials, energy, chemical additives and equipment.

  Processed food and beverage output is primarily sold to food retailers (40%), and domestic foodservice providers (21%), or exported around the world (17%).

Chart C3.1
Food Processing Input Composition and Output Disposition
2006



Source: Statistics Canada Input/Output Model and AAFC calculations.
Note: Does not add up to 100% due to missing confidential data.

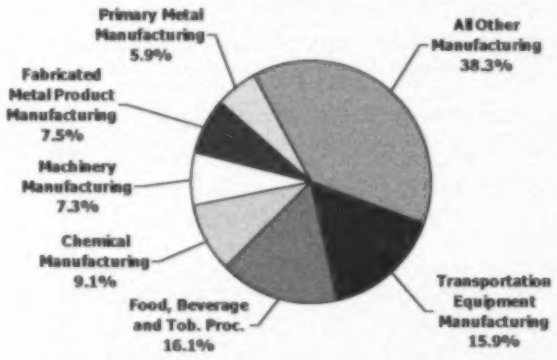
Food and beverage processing is one of the most important manufacturing sectors in Canada

- **Food and beverage processing was the largest manufacturing activity in Canada in 2009. Food and beverage processing's share of total manufacturing GDP rose to 16.1%, while transportation equipment declined to 15.9% due to the recession.**

  Normally, food and beverage processing is the second largest manufacturing activity following transportation equipment, but the economic recession of 2009 adversely affected automobile and aviation equipment manufacturing industries.

  Food is considered a necessity and so food and beverage processing tends to not be affected by economic recessions as much as other manufacturing industries.

Chart C3.2
Distribution of Total Manufacturing GDP by Sector
2009

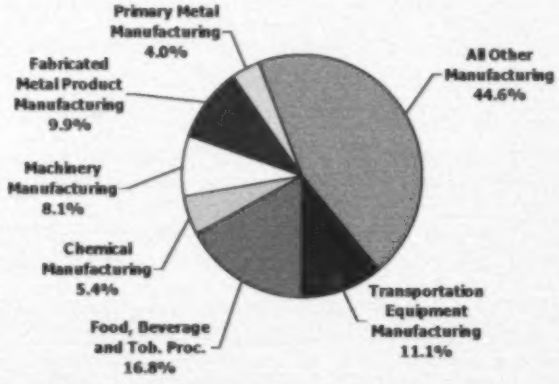

Primary Metal Manufacturing 5.9%
All Other Manufacturing 38.3%
Fabricated Metal Product Manufacturing 7.5%
Machinery Manufacturing 7.3%
Chemical Manufacturing 9.1%
Transportation Equipment Manufacturing 15.9%
Food, Beverage and Tob. Proc. 16.1%

Source: Statistics Canada.

- **Food and beverage processing's ranking in the manufacturing sector was evident from employment shares as well.**

  Food and beverage processing's share of total manufacturing employment rose to 17% in 2009, while that of transportation fell to 11%.

Chart C3.3
Distribution of Total Manufacturing Employment by Sector
2009


Primary Metal Manufacturing 4.0%
All Other Manufacturing 44.6%
Fabricated Metal Product Manufacturing 9.9%
Machinery Manufacturing 8.1%
Chemical Manufacturing 5.4%
Transportation Equipment Manufacturing 11.1%
Food, Beverage and Tob. Proc. 16.8%

Source: Statistics Canada.

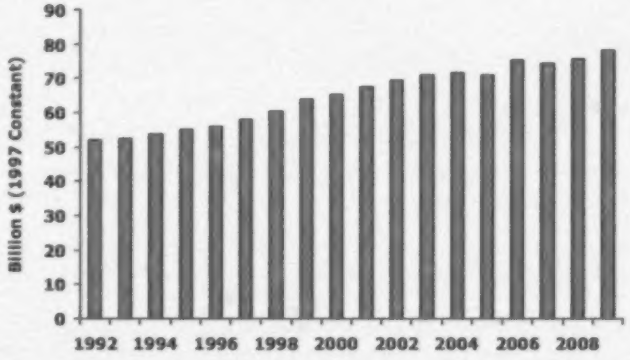
Food and beverage processing output resumed its upward trend in 2009

- **Since the early 1990s, the value of food and beverage processing shipments in real terms has grown by over 50% to reach $78 billion in 2009.**

  The largest food and beverage processing industry is meat product processing, followed by dairy product processing and beverage processing.

  Meat and dairy product processing together accounted for about 43% of the real value of food and beverage shipments in 2009.

Chart C3.4
Real Value of Food and Beverage Manufacturing Shipments
1992-2009



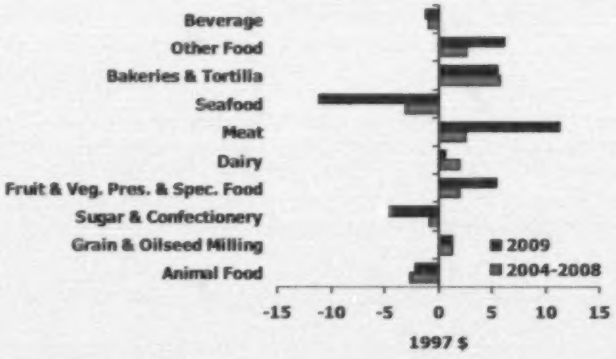
Source: Statistics Canada and AAFC calculations.

- **Most food processing sub-industries experienced a slowdown in average annual growth rates in the last decade relative to the late 1990s.**

  Several notable exceptions included animal food product processing and sugar and confectionery product processing.

  Some industries, such as beverage manufacturing and grain and oilseed milling, have experienced slightly negative growth in recent years.

Chart C3.5
Average Annual Growth in Shipments
for Food and Beverage Processing Sub-Industries
2004-08 and 2009



Source: Statistics Canada and AAFC calculations.

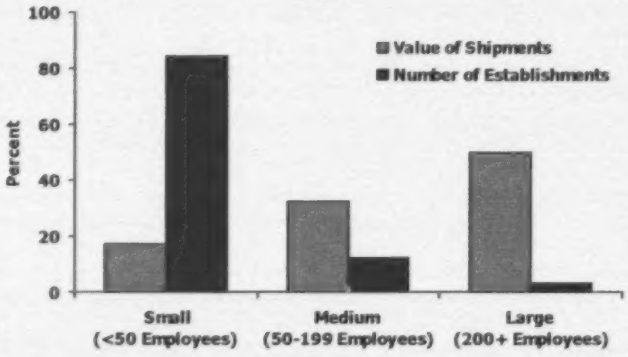
Large food processing establishments accounted for 3% of the total number of establishments, but half of the industry output

- **In 2008, 8,237 food processing establishments were operating across Canada.**

  Large food processing establishments (with 200 or more employees) produce the bulk of output. In 2008, they comprised only 3% of the total number of establishments, but accounted for 50% of the value of shipments.

  In contrast, small establishments (with less than 50 employees) comprised 84% of the total number of establishments, but accounted for only 17% of the total value of shipments.

Chart C3.6
Distribution of Food Processing Shipments and Number of Establishments by Employment Size
2008



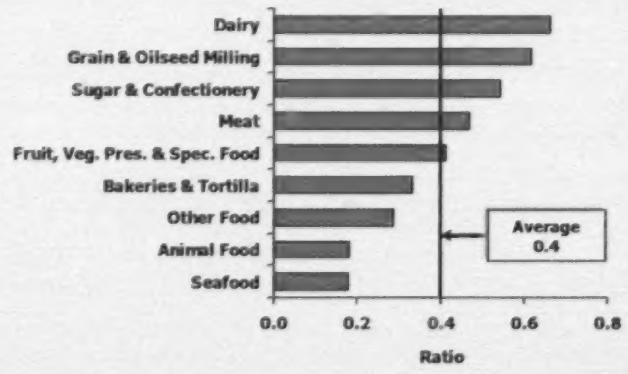
Source: Statistics Canada, special tabulation.
Note: This data is not comparable to previous information due to changes in definitions.

- **Concentration ratios (CR4) in the food processing industry vary from the most concentrated dairy sub-sector to the least concentrated seafood and animal food processing sub-sectors.**

  The Canadian food processing industry has undergone significant structural change since the early 1990s and is becoming increasingly consolidated.

  In 2008, the top four largest dairy product processing establishments accounted for 66% of sales. The top four largest seafood processing establishments accounted for 18% of sales.

Chart C3.7
Concentration Ratio (CR4)* in the Food Processing Industry
2008



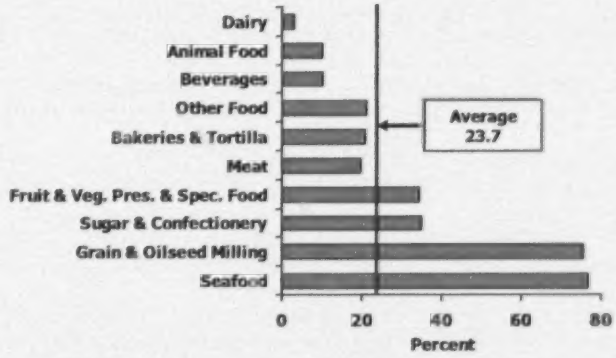
Source: Statistics Canada, Annual Survey of Manufacturing and Logging, special tabulation.
Note: *CR4 measures the share of sales accounted for by the top four largest firms in the sector.

Some food and beverage processing industries are more dependent on trade than others

- **About three-quarters of food and beverage processing shipments in Canada are destined for the domestic market and the rest are exported.**

  On average, 24% of food and beverage processing shipments were exported in 2009. Some sub-industries are more export oriented than others. For example, 76.8% of seafood product shipments and 75.6% of grain and oilseed product shipments were exported in 2009.

Chart C3.8
Food and Beverage Processing Export Intensities* by Sub-Industry 2009

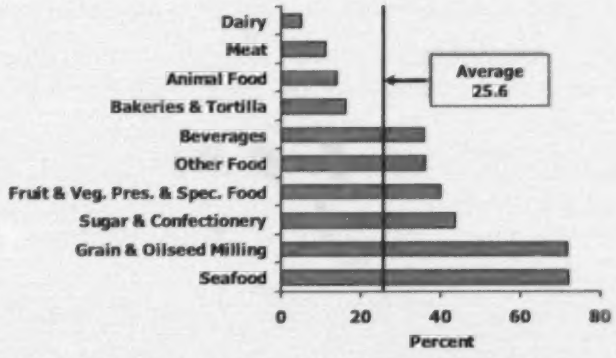


Source: Statistics Canada and AAFC calculations.
Note: *Calculated as exports as a share of shipments.

- **Most food and beverage processors compete with imports for domestic sales. On average, food and beverage imports accounted for 25.6% of the domestic market in 2009.**

  Some of the sub-industries with the highest export intensities also have the highest import intensities, such as seafood (71.9%) and grain and oilseed milling (71.6%).

Chart C3.9
Food and Beverage Processing Import Intensities* by Sub-Industry 2009

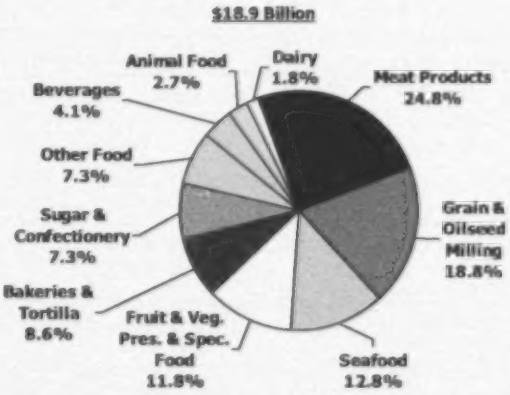


Source: Statistics Canada and AAFC calculations.
Note: *Calculated as imports/(shipments-exports+imports).

Processed meat products, which are Canada's most important food and beverage processing industry exporter, is highly reliant on the U.S. market

- **In 2009, roughly 56% of the $18.9 billion total value of exports of processed food and beverage products was accounted for by processed meat products, grain and oilseed millings, and seafood products.**

Chart C3.10
Sub-Industry Exports as a Share of Total Food and Beverage Processing Exports
2009

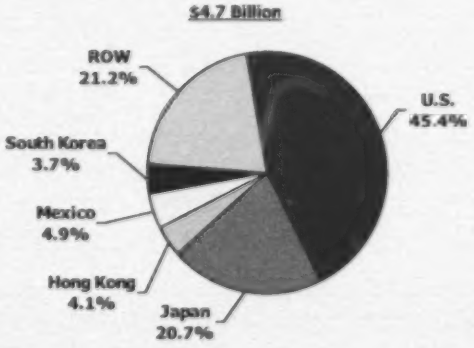


Source: Statistics Canada and AAFC calculations.

- **The U.S. was the destination for 45.4% of the $4.7 billion in processed meat product exports in 2009.**

  Japan was the next most important processed meat product export destination (20.7%), followed by Mexico (4.9%), Hong Kong (4.1%) and South Korea (3.7%).

Chart C3.11
Destination of Processed Meat Product Exports
2009



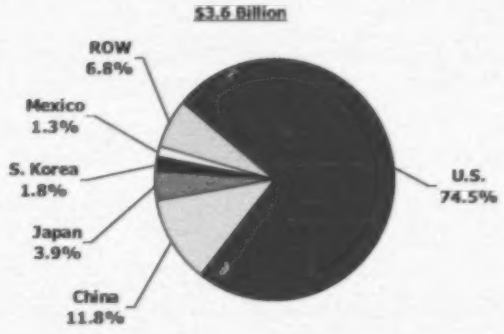
Source: Statistics Canada and AAFC calculations.

Other important processed food exporters are also highly focussed on the U.S. for export sales

- **In 2009, the grain and oilseed milling industry exported $3.6 billion in products, with roughly three-quarters of this value accounted for by exports to the U.S.**

  China was the next most important export destination for the grain and oilseed milling industry, at 11.8% of exports, followed by Japan (3.9%) and South Korea (1.8%).

Chart C3.12
Destination of Grain and Oilseed Milling Industry Exports
2009

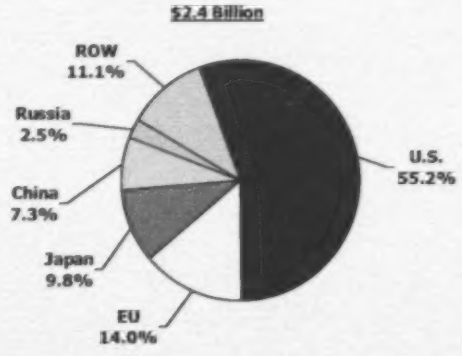


Source: Statistics Canada and AAFC calculations.

- **Over one-half of Canada's $2.4 billion in seafood industry exports in 2009 were shipped to the U.S.**

  Other major markets included the EU (14%), Japan (10%) and China (7%).

Chart C3.13
Destination of Seafood Industry Exports
2009



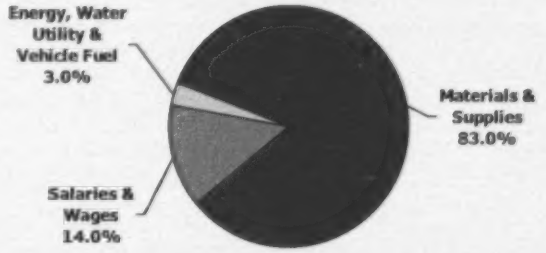
Source: Statistics Canada and AAFC calculations.

Materials and supplies are the largest cost component of variable costs in food and beverage processing industries

- **Total variable costs are the sum of all costs of production excluding physical capital. Out of total variable costs in food processing, materials and supplies were by far the largest component, accounting for 83% of total variable costs in 2008.**

  Labour costs (salaries and wages) were the second most important cost at 14% of total variable costs, while water and fuel accounted for only 3%.

Chart C3.14
Variable Input Costs in Food Processing
2008



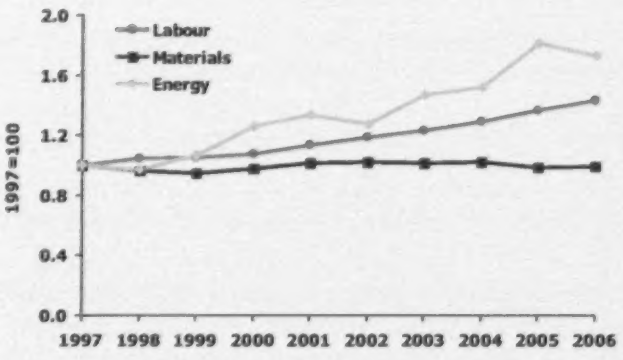
Source: Statistics Canada and AAFC calculations.

- **Prices for materials and supplies used by food processors were relatively unchanged between 1997 and 2006, decreasing by an average of 0.1% annually.**

  Since materials and supplies are by far the largest input component in food processing, the industry faced relatively stable purchasing costs for this key input grouping.

  On the other hand, the average hourly wage paid to all employees (those paid by the hour and those receiving salaries) grew by about 4% annually.

Chart C3.15
Input Price Indexes, Food Processing Industry
1997-2006



Source: Statistics Canada.

Note: The average share of total cost over the same period was 16% for labour, 72% for materials and c 2% for energy.

Labour cost pressures in food and beverage processing eased in 2008 and 2009 due to the impact of the economic recession

- **Labour costs in food and beverage processing fell more dramatically than did those in total manufacturing.**

  Average weekly earnings in food and beverage processing, which tend to be below those in total manufacturing and beverage processing, peaked in 2007 before falling back in 2008 and 2009 during the recession.

  Employment in food and beverage processing fell less than that in total manufacturing during the recession of 2009. This is because the food and beverage processing industry experienced less of a contraction in demand than did other manufacturing industries. This is due to the fact that food is a necessity and consumers actually switched their spending toward more food from stores than restaurant meals during the recession.

Chart C3.16
Average Weekly Earnings in Food and Beverage Processing and Total Manufacturing
1991-2009

Source: Statistics Canada, special tabulation.

Investment in machinery and equipment in food and beverage processing increased sharply in 2009, contributing to an increase in the industry's capital stock

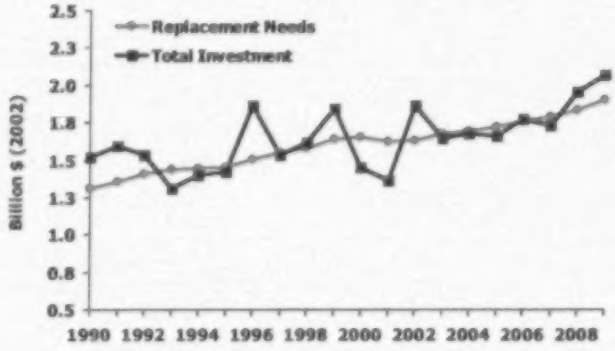
- **Investment in capital stock is important for helping the food and beverage processing industry improve efficiency, raise productivity and lower costs.**

  The Canadian food processing industry's total investment in capital stock in constant dollar terms was $1.6 billion annually, on average, over the 1990 to 2009 period.

  This is just slightly higher than replacement needs. As a result, the industry's total capital stock increased by only $40 million annually.

  Investment patterns in buildings, and machinery and equipment were very different over the same period. In the case of buildings, the food processing industry did not make sufficient investments to maintain the stock, leading to a decrease of $40 million annually in the real value of buildings. For machinery and equipment, the industry both replaced existing stocks and added an average of $80 million annually to the quantity of these assets.

Chart C3.17
Investment in Capital Stock in Food Processing Industry
1990-2009

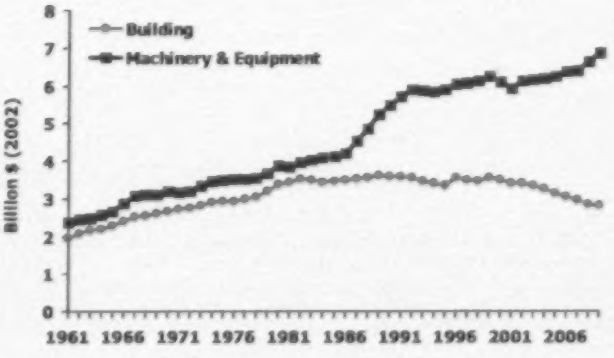


Source: Statistics Canada.

- **Capital stock in the food processing industry is the result of previous capital investments and depreciation.**

  The stock of machinery and equipment in food processing rose sharply in the late 1980s before resuming its steady increase. The stock of buildings rose steadily until 2000, and has been declining ever since.

Chart C3.18
Capital Stock in Food Processing
1961-2009



Source: Statistics Canada.

NOTE(S):

Capital stock is comprised of buildings, engineering structures, and machinery and equipment. Total investment in capital stock is made up of purchases needed to offset depreciation (replacement needs) and purchases to expand the capital stock. When replacement needs exceed investment, the capital stock falls, since the existing stock is not being maintained. When investment exceeds replacement needs, the stock increases.

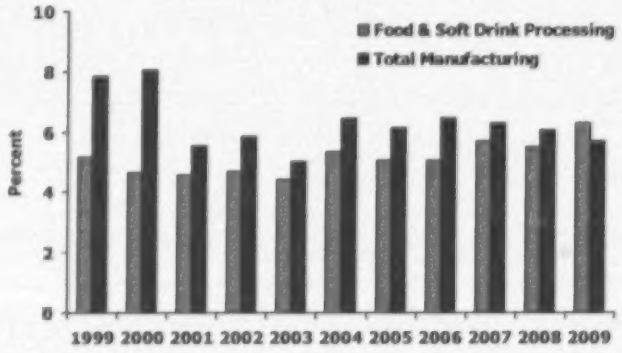
Profit margins in food processing were up in 2009, despite the recession

- **For the first time in many years, profit margins in food and soft drink processing were higher than in total manufacturing.**

  Profit margins across most manufacturing sectors dipped in 2009 due to the recession. The profit margins in food and soft drink processing have generally been below total manufacturing. In 2009, they outperformed the rest of the manufacturing sector with higher profit margins.

  Food, as a necessity, generally continues to be purchased during recessions while other manufacturing products such as durable goods (e.g. cars, appliances) do not.

Chart C3.19
Profit Margin Ratio in Food and Total Manufacturing
1999-2009

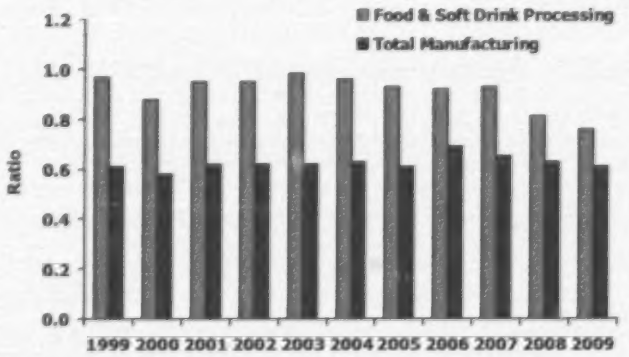


Source: Statistics Canada.

- **The food and soft drink industry's debt to equity ratio, which has been stable over the past decade, fell in 2008 and 2009. It still remains higher than that of the total manufacturing sector.**

  However, in 2009 this gap narrowed significantly relative to other manufacturing industries.

Chart C3.20
Debt to Equity Ratio in Food and Total Manufacturing
1999-2009



Source: Statistics Canada.

Investment in machinery and equipment is one way in which food manufacturing establishments innovate

- **A higher percentage of establishments in food manufacturing reported innovating compared to total manufacturing.**

  Seventy-seven percent of food manufacturing and 72% of total manufacturing establishments reported introducing product or process innovations between 2005 and 2007.

  For those food manufacturing establishments which innovated, the most important innovative activity was introducing new or significantly improved products (goods), at 61% of respondents, higher than the 54% for total manufacturing. For those food manufacturing firms which introduced new processes, 46% reported introducing new manufacturing methods for process innovations, while 31% reported innovating in process support activities.

Chart C3.21
Percentage of Business Units Which Innovated During the Years 2005-2007

		TOTAL MANUFACT.	FOOD MANUFACT.
		Percent	
Product or Process Innovators		**72**	**77**
New or Significantly Improved Products	Goods	54	61
	Services	28	24
New or Significantly Improved Processes	Manufacturing Methods	43	46
	Logistics, Delivery or Distrib. Methods	14	18
	Support Activities	28	31

Source: Statistics Canada, Survey of Advanced Technology, 2007.

- **Innovation varies across food manufacturing industries.**

  Fruit and vegetable preserving establishments led product (69%), and process (71%) innovations, while 56% introduced organizational innovations between 2005 and 2007. A relatively large percentage of bakeries and tortilla manufacturing and dairy and meat product processing establishments also reported introducing product innovations over this same period. Seafood product processing establishments were the least innovative, with only 38% and 31% introducing product and process innovations, respectively.

  About 40% of sugar and confectionery processors introduced marketing innovations, as well as meat product processing (38%) and fruit and vegetable preserving establishments (38%).

Chart C3.22
Extent of Innovation in Food Manufacturing 2005-2007

INDUSTRY	PRODUCT	PROCESS	ORGANIZATIONAL	MARKETING
	% of Business Units			
Food Manufacturing	60	47	40	28
Animal Food	55	50	42	18
Grain & Oilseed Milling	56	39	42	14
Sugar & Confectionery Products	60	48	36	40
Fruit & Veg. Pres. & Spec. Food	69	71	56	38
Dairy Products	66	42	28	25
Meat Products	63	58	47	38
Seafood Products	38	31	27	17
Bakeries & Tortilla	68	48	43	35
Other Food	61	39	37	20

Source: Statistics Canada, Survey of Advanced Technology, 2007.

Investing in machinery and equipment is important for introducing new advanced technologies

- **Most food processing industries tend to acquire their advanced technologies by purchasing them, primarily through the purchase of machinery and equipment (58%).**

  This compares to total manufacturing (57%). This is true for most food processing sub-industries, with the exception of grain and oilseed milling establishments, which tend to introduce advanced technologies by modifying existing technologies (52%).

  Only 17% of food manufacturing establishments introduced advanced technologies by developing their own technologies, compared to 22% of total manufacturing establishments. Nevertheless 23% of animal food, sugar and confectionery and other food processors acquired technologies by developing their own.

Chart C3.23
Business Units Acquiring or Integrating Advanced Technologies by Method
2005-2007

INDUSTRY	TECHNOLOGY PURCHASER	TECHNOLOGY MODIFIER	TECHNOLOGY DEVELOPER
	% of Business Units		
Total Manufacturing	57	21	22
Food Manufacturing	58	25	17
Animal Food	62	15	23
Grain & Oilseed Milling	43	52	5
Sugar & Confectionery Prod.	60	18	23
Fruit & Veg. Pres. & Spec. Food	47	31	19
Dairy Products	53	39	6
Meat Products	59	20	21
Seafood Products	78	13	9
Bakeries & Tortilla	58	26	16
Other Food	54	23	23

Source: Statistics Canada, Survey of Advanced Technology, 2007.

NOTE(S):

Technology is broadly defined to include the technical means and know-how required to produce a product or service. It takes the form of equipment, materials, processes, blueprints and knowledge.

Advanced technology refers to a new technology that performs a new function or improves some function significantly better than commonly used technologies. Examples include biotechnology, nanotechnology, etc.

Source: Survey of Advanced Technology, 2007.

Food processing establishments reported that improved productivity and keeping up with competitors are key benefits of innovating

- **Sixty-four percent of establishments reported that improved product quality, and 60% reported that improved labour productivity were key benefits of adopting advanced technologies in 2005 to 2007.**

  Improved skill levels in the organization and the ability to better respond to customers were also important. Keeping up with competitors (60%) and increased profitability (58%) were other important benefits of adopting advanced technologies. This was followed by improved satisfaction of client needs from product improvements (58%) and an increased ability to respond to customer requirements (54%).

Chart C3.24
Effects of the Adoption of Advanced Technologies in Food Manufacturing (Business Units that use Advanced Technologies) 2005-2007

BENEFITS	BUSINESS UNITS REPORTING HIGH/MEDIUM IMPORTANCE
	Percent
Improve Productivity	
Reduced labour requirements/unit of output	60
Reduced material consumption/unit of output	42
Product Improvement	
Improvement in product quality	64
Improved satisfaction of client needs	58
Business Unit Organization Changes	
Increased flexibility, customization or specialization	46
Increased skill requirements	53
Market Performance	
Increased market share	37
Increased profitability	58
Keeping up with competitors	60
Opening new export markets	30
Increased ability to respond to customer requirements	54

Source: Statistics Canada, Survey of Advanced Technology, 2007.

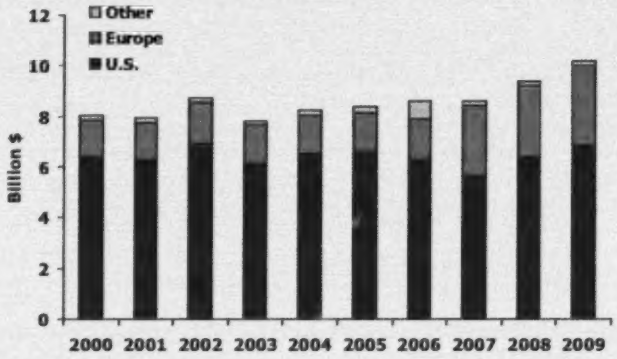
Foreign direct investment (FDI) is an important source of capital investment and innovation in the Canadian food and beverage processing industry

- **The stock of inward FDI in Canadian food processing in 2009 totalled $10.2 billion.**

  The U.S. accounted for 68% of Canada's stock of inward food processing FDI in 2009, and Europe accounted for another 31%.

  Europe's share has been growing over time.

Chart C3.25
Stock of Inward FDI in Food Processing by Country of Origin 2000-2009*

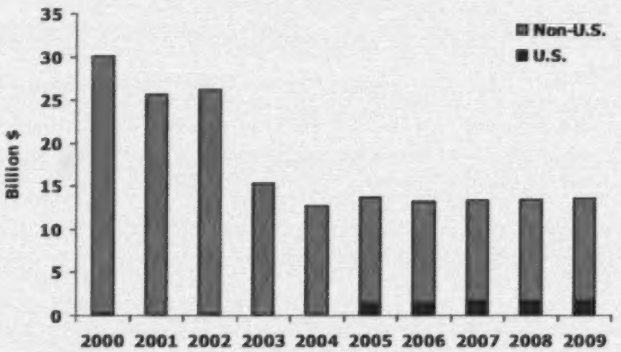


Source: Statistics Canada and AAFC calculations.
Note: *2009 data is preliminary.

- **The stock of FDI in the Canadian beverage and tobacco processing industry totalled $13.5 billion in 2009.**

  The stock of FDI in the Canadian beverage and tobacco processing industry, on the other hand, originated mostly from outside North America. Roughly 80% of this FDI originated in Europe, although this share has declined slightly over time.

Chart C3.26
Stock of FDI in Beverage and Tobacco Processing by Country of Origin 2000-2009*



Source: Statistics Canada and AAFC calculations.
Note: *2009 data is preliminary.

NOTE(S):

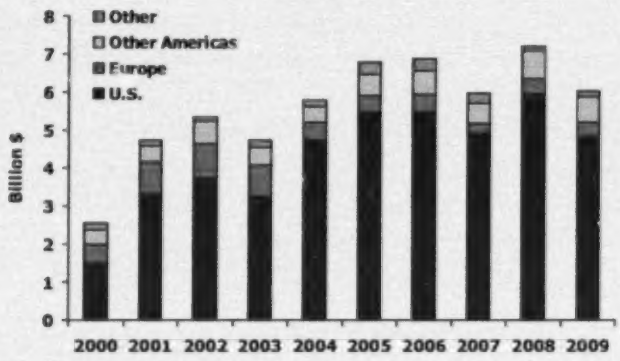
FDI refers to an investment made by a non-resident entity (an individual or a public or private enterprise) through investment, mergers and acquisitions or purchasing of shares, so as to obtain a 10% or greater equity stake in an enterprise resident in another country.

Inward investment means investment into a Canadian entity by a foreign entity, while outward investment means investment made by a Canadian entity in a foreign entity.

Canadian food and beverage firms have also been investing abroad but this declined in 2009

- **The U.S. accounted for more than 80% of the total stock of Canadian outward FDI in food processing, which declined dramatically in 2009 due to tighter capital markets and financial uncertainty.**

Chart C3.27
Stock of Outward FDI in Food Processing by Country of Destination 2000-2009*



Source: Statistics Canada and AAFC calculations.
Note: *2009 data is preliminary.

SECTION C4

Primary Agriculture

INTRODUCTION:

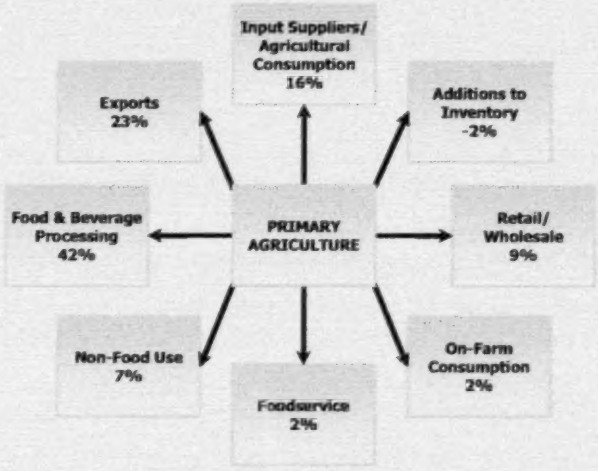
Agricultural producers are the foundation of the agriculture and agri-food system and have direct links to all stages in the supply chain. They also contribute significantly to the economic growth and activity of the Canadian economy through these linkages. Developments in commodity markets and other sectors in the chain such as production and price trends for farm inputs, food processing, food retail and foodservice, all have impacts on the structure and performance of primary agriculture. At a more disaggregated level, farmers are diverse with different business strategies and management skills, differing by farm size and typology. This diversity explains the differences in performance between farms.

Agricultural producers have direct links to all the stages in the agri-food supply chain

- **The Canadian food and beverage processing industry is the single most important market for agricultural products. It utilizes almost half (42%) of the value of agricultural products available in Canada.**

  Agricultural producers have many alternative marketing choices. In 2006, 23% of farm production was exported directly (not included in the portion which is directed to food and beverage and subsequently exported as food products), 16% was consumed within primary agriculture (as feed, seeds, etc.), 9% was distributed directly to consumers through retail and on-farm sales (consisting mostly of fresh fruits and vegetables). Another 7% was directed to non-food uses (hides, tobacco and bioproducts).

Chart C4.1
Disposition of the Value of Agricultural Production
2006



Source: Statistics Canada Input/Output Model and AAFC calculations.

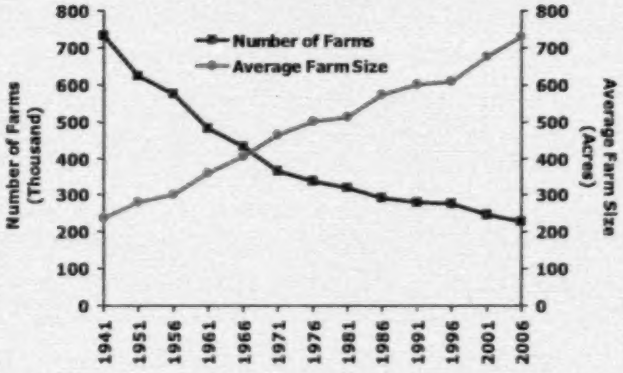
Primary agriculture is a dynamic sector which continues to restructure and adapt to changing economic conditions

- **Over the past 50 years, average farm size has tripled while the number of farms in Canada has declined.**

  In 2006, there were 229,373 farms, representing a 7% decline from 2001. This compares to a 11% decline between 1996 and 2001.

  At the same time, the average farm size is becoming larger. Technological advances and increasing productivity have enabled an increasing scale of operation and consolidation.

Chart C4.2
Number and Size of Farms in Canada
1941-2006



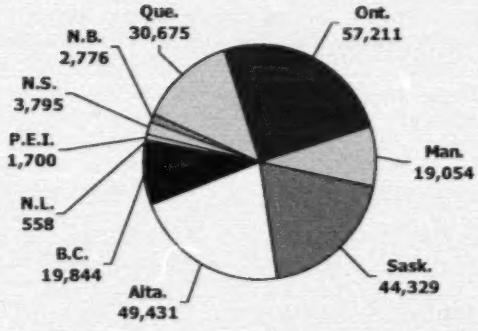
Source: Statistics Canada, Census of Agriculture, various years.

- **The number of farms continued to decline in all provinces in 2006.**

  In 2006, Ontario had the most farms at 57,211, followed by Alberta at 49,431 and Saskatchewan at 44,329.

  Saskatchewan and Newfoundland and Labrador reported the largest decline in the number of farms between 2001 and 2006 at 12% and 13%, respectively. British Columbia reported the smallest decline, at 2% over the same period.

Chart C4.3
Distribution of Farms by Province
2006



Source: Statistics Canada, 2006 Census of Agriculture.

Canada produces a diverse set of commodities, which vary by province

In British Columbia, agricultural production is dominated by horticulture due to its milder climate and longer growing season.

The Prairie Provinces produce the bulk of Canada's red meat and grains and oilseeds. Alberta and Manitoba are the top cattle and hog-producing provinces, respectively. Saskatchewan is the largest producer of grains and oilseeds.

Ontario and Quebec are the major dairy producing regions of Canada. Ontario also produces most of Canada's corn and soybeans. Quebec is the largest pork producer apart from the Prairie Provinces.

In Atlantic Canada, horticulture production dominates, led by potatoes. Dairy production is also important.

Chart C4.4
Top Commodities by Province and Territory

Source: AAFC.

Over time, the commodity mix has been changing by product and by region

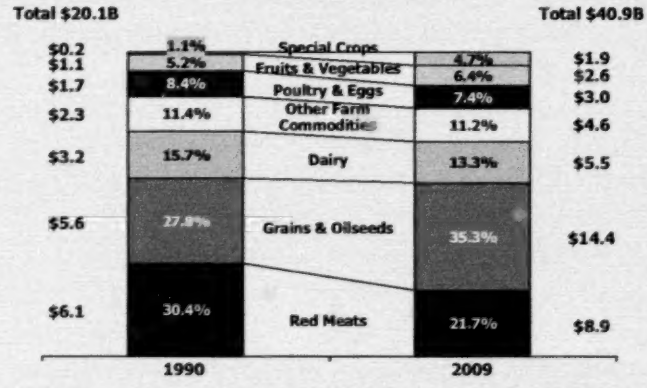
- **The distribution of market receipts across commodities has changed since 1990.**

  Market receipts in 2009 were more than double the 1990 level at $40.9 billion. In 2009, grain and oilseed receipts rose substantially as a share of the total due to greater production and higher prices in recent years, while the importance of red meats fell.

  Market receipts from special crops increased about nine-fold between 1990 and 2009, while their market share increased from 1.1% to 4.7%.

  The share of market receipts for other commodities such as poultry and eggs, and dairy products fell over this period, while that of fruits and vegetables, rose slightly.

Chart C4.5
Market Receipts by Commodity Share
1990 and 2009



Source: Statistics Canada.

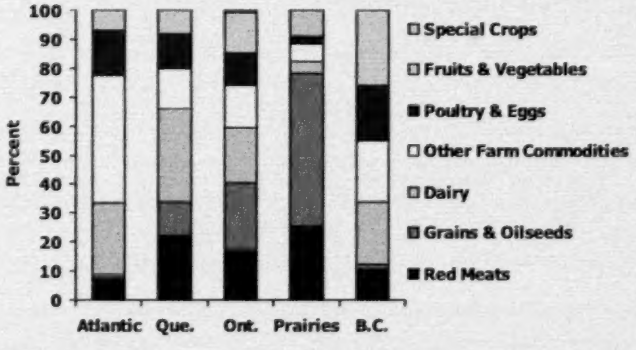
- **The distribution of market receipts amongst commodities varies by region or province.**

  On the Prairies, grains and oilseeds accounted for the largest share of regional market receipts (53%), followed by red meats (25%). In British Columbia, fruits and vegetables, dairy and other farm commodities, such as floriculture and nursery, accounted for 69% of that province's market receipts.

  In Quebec, dairy and red meats were more important, accounting for more than half of market receipts in that province. In Ontario, grains and oilseeds, dairy and red meats accounted for the bulk of provincial market receipts (66%).

  In the Atlantic Provinces, other farm commodities such as potatoes, floriculture and furs accounted for 44% of that region's market receipts in 2009, followed by dairy, at 25%.

Chart C4.6
Regional Market Receipts
by Commodity Share
2009



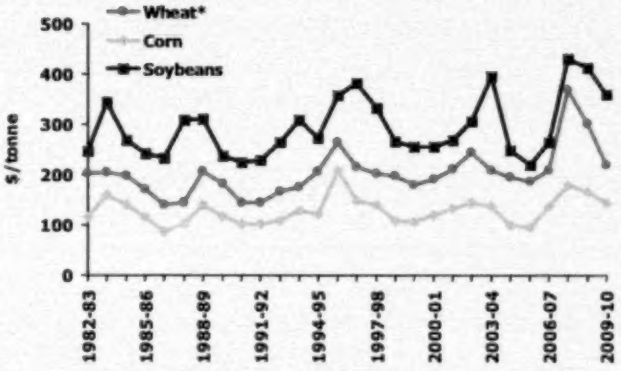
Source: Statistics Canada.

The value of market receipts are affected by commodity price developments in Canada and the U.S.

- **The world economic downturn in 2008-09, combined with sharp increases in world crop production, led to a strong decline in world crop prices for the 2009-10 crop year from their peak in 2007-08.**

  Since April 2009, an appreciating dollar has placed downward pressure on Canadian prices since Canadian prices are equivalent to world prices, reported in U.S. dollars and adjusted for the exchange rate and transportation costs. As a result, Canadian grain and oilseed prices fell in 2009-10, but remained higher than historical averages.

Chart C4.7
Canada Corn, Wheat and Soybean Prices
1982-2009



Source: Canadian Wheat Board and University of Guelph, Ridgetown College.

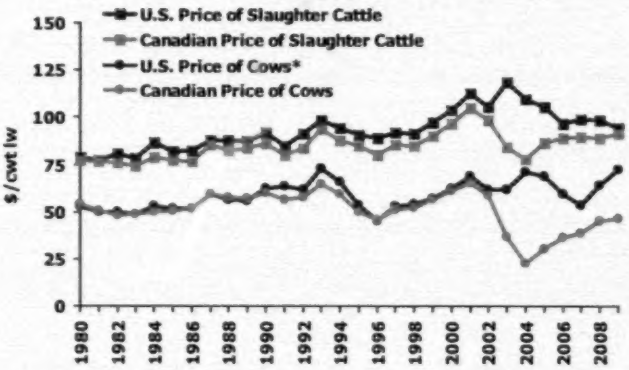
Note: * Canada Western Red Spring.
Data for 1982-83 to 1993-94 are AAFC estimates, based on prices for 1CWRS, 11.5% protein.

- **Canadian cattle prices on the other hand, continued to remain weak.**

  Historically, cattle prices in Canada and the U.S. have moved fairly consistently together. However, starting with the ban on trade in animals with the U.S., following the BSE outbreak in 2003, a gap in prices was created between Canada and the U.S.

  With the resumption of trade in 2005 for cattle under 30 months of age, and in 2008 for animals over 30 months of age, the gap in prices was closed somewhat. However, the implementation of Country of Origin Labelling (COOL) in 2008 in the U.S. continued to negatively affect the Canadian price of slaughter cattle and the gap widened again.

Chart C4.8
Cattle Price Cycle
1980-2009



Source: USDA ERS, Canfax and AAFC calculations.

Note: * This series was terminated in 2009. The 2009 value is estimated from the % change between 2008 and 2009 of the annual average of national cutter price.

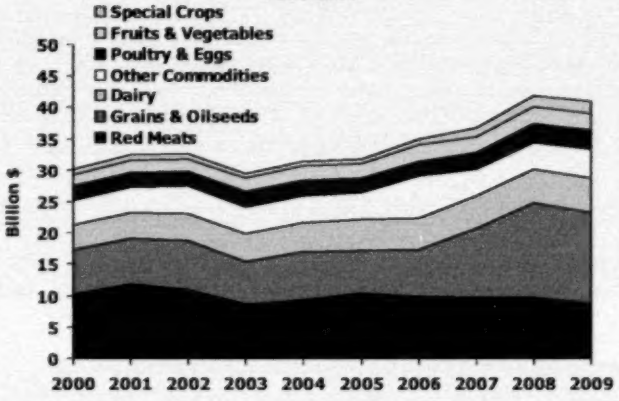
As a result, market receipts fell in 2009

- **Market receipts, at $40.9 billion, were 2% lower in 2009 compared to the previous year, but still 17% higher than the previous five-year average.**

  Crop receipts remained virtually unchanged in 2009, following two consecutive years of substantial increases. After record highs observed in 2008, grain and oilseed receipts fell slightly in 2009, as the drop in prices resulting from higher international stocks of major grains and oilseeds was almost fully offset by increased quantities sold.

  In 2009, livestock receipts dropped by 5%, mainly as a result of the COOL regulations in the U.S., which led to lower live animal exports to the U.S., as well as the global recession that reduced demand for livestock products. The number of cattle and hogs shipped across the border fell by over 30% from 2008 levels. Cattle and calf receipts dropped by 11% in 2009, while hog market receipts were down for the fifth consecutive year.

Chart C4.9
Market Receipts by Commodity
2000-2009

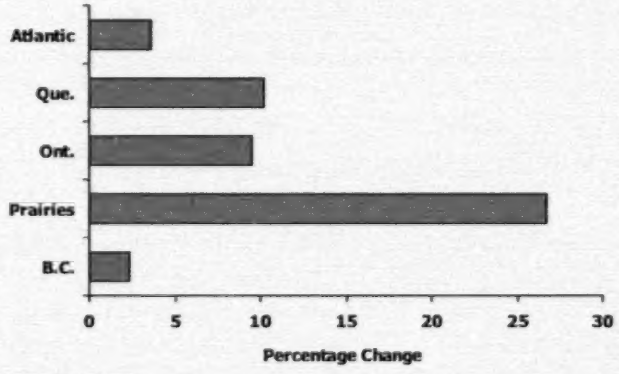


Source: Statistics Canada.

- **Although market receipts hit record highs in 2008, 2009 was still a strong year in all regions of Canada, as receipts remained well above the previous five-year average (2004-2008).**

  Compared to other regions, the Prairies experienced the largest gains in 2009, with market receipts about 27% above the 2004-2008 average.

Chart C4.10
Regional Market Receipts
Relative to Five-Year Average
2009



Source: Statistics Canada.

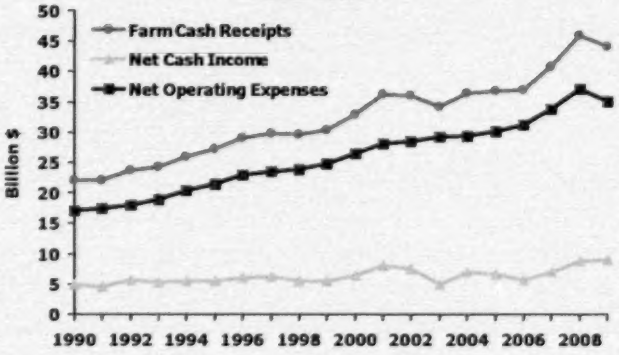
At the same time, net operating expenses declined for the first time since 1986, leading to a small increase in net cash income but realized net income was virtually unchanged

- **In 2009, net cash income amounted to $9.0 billion, which was relatively unchanged from that of 2008, but above its five-year average (2004-2008).**

  Net cash income stabilized as both net operating expenses and farm cash receipts declined by 5% and 4%, respectively in 2009.

  The result was that net cash income rose 3% in 2009. This increase in net cash income followed year-over-year increases of over 20% in both 2008 and 2007, driven mainly by strong crop market receipt in those years.

Chart C4.11
Farm Cash Receipts, Net Cash Income and Net Operating Expenses 1990-2009



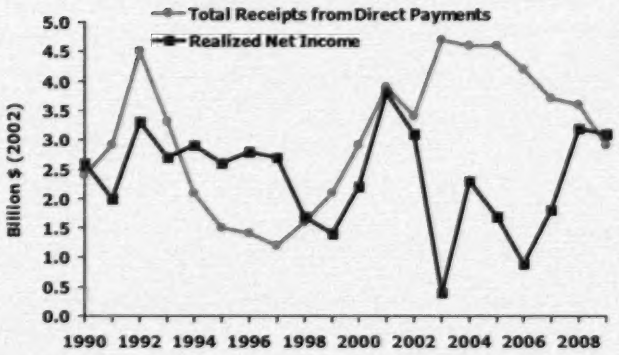
Source: Statistics Canada and AAFC calculations.

- **After adjusting for depreciation and inflation, real realized net income was largely unchanged in 2009 over 2008 following two consecutive years of increases.**

  Real direct payments declined to $2.9 billion in 2009, continuing its downward trend since its record peak in 2003.

  Both federal and provincial direct payments have fallen in light of higher crop prices and record yields in the last few years, and despite difficulties in the livestock sector, several programs have also been wound down.

Chart C4.12
Realized Net Income and Direct Payments 1990-2009



Source: Statistics Canada and AAFC calculations.

Similarly, net value-added in agriculture fell sharply in 2009

- **Net value-added in agriculture fell by 29% to $11.1 billion in 2009, after reaching a record $15.7 billion in 2008. It still remained higher in all but two other years in the past two decades.**

  This decline can be explained by a sharp drop in farm inventories, lower market receipts and reduced program payments.

  In addition to measuring the value of economic production in the agriculture sector, net value-added reflects the return to all factors of production (e.g. rent to land, wages to labour, and interest to capital). In 2009, the distribution of this net value-added to the factors of production changed, so that there was a substantial drop in corporate profits and unincorporated operator returns. Interest payments decreased as well in 2009, while wages paid to family and non-family members increased.

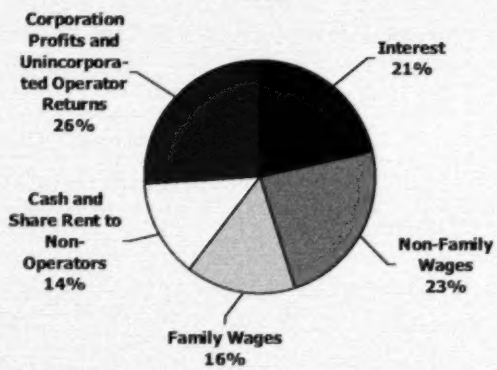
Chart C4.13
Net Value-Added in Agriculture
1991-2009

Source: Statistics Canada and AAFC calculations.

- **The distribution of net value-added to the various factors of production changed significantly in 2009.**

  Corporate profits and unincorporated operator returns as a share of net value-added were down substantially in 2009, accounting for 26% of net value-added, compared to the 43% returns of last year. All other categories were up over 2008. For example, a higher share (14%) of value-added was distributed to non-operator landowners in the form of rent, up from 10% last year. Interest accounted for a slightly higher (21%) of net value-added, up from 19% in 2008. Finally, wages paid to family members increased from 11% to 16% as a share of total net value-added, while wages paid to non-family members rose from 17% to 23%.

Chart C4.14
Distribution of Net Value-Added in Agriculture
2009


Corporation Profits and Unincorporated Operator Returns 26%
Interest 21%
Cash and Share Rent to Non-Operators 14%
Non-Family Wages 23%
Family Wages 16%

Source: Statistics Canada and AAFC calculations.

NOTE(S):

Net value-added in agriculture measures the value of economic production in the Canadian agriculture sector. It reflects the return to the various factors of production, including rent to non-operator landlords, interest to lenders and wages to family and non-family members, as well as profits to corporations and unincorporated operators.

A more disaggregated picture of the agriculture sector shows that farms continue to get larger

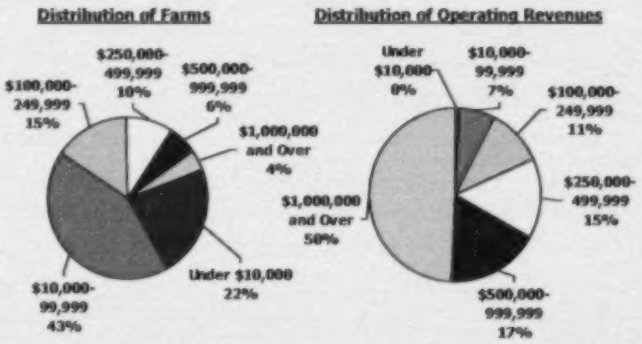
- **Large farms also tend to account for a greater share of production.**

  In 2008, most farms were small (65%) with revenues under $100,000. Fifteen percent of farms were medium sized, with revenues between $100,000 and $249,999, and 20% of farms were large, with revenues of $250,000 and over. The largest farms, with revenues over $1 million, accounted for 4% of farms, and this share has been increasing over time.

  These large farms (revenues of $250,000 and over) accounted for 82% of total operating revenues and received 78% of agricultural program payments.

  Small and medium sized farms (with total operating revenues between $10,000 and $249,999), on the other hand, accounted for only 18% of total operating revenues and received 21% of program payments in 2008.

Chart C4.15
Distribution of Farms and Operating Revenues by Revenue Class
2008



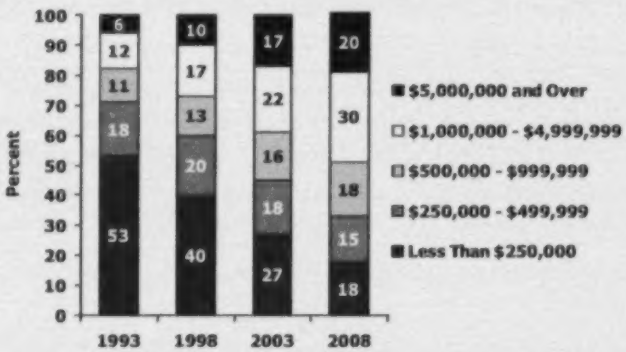
Source: Statistics Canada, Taxation Data Program and AAFC calculations.

- **Over time, the very largest farms ($5 million and over in revenues) are accounting for an increasing share of production.**

  In 2008, small and medium sized farms, with revenues under $250,000, accounted for a much smaller share of operating revenues (18%) than they had in 1993 (53%). Million-dollar farms accounted for half of total operating revenues, up from 18% in 1993.

  The largest farms ($5 million and over), which accounted for a small share of the total, continue to grow in importance. Farms have expanded their share of operating revenues the fastest, from 6% in 1993 to 20% in 2008.

Chart C4.16
Distribution of Total Operating Revenues by Revenue Class
1993-2008



Source: Statistics Canada, Taxation Data Program and AAFC calculations.

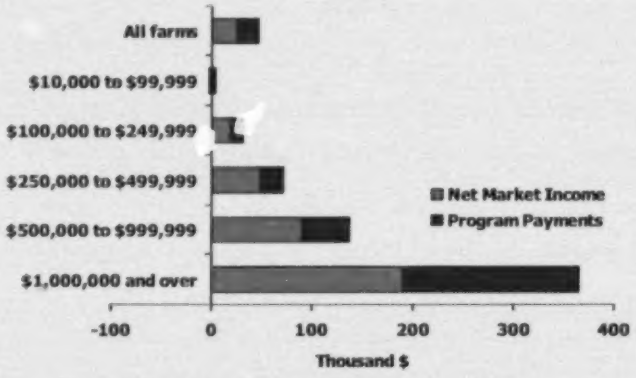
Farm level performance can be measured by average operating income, and varies by farm size and province

- **Average net operating income was affected by a combination of lower market returns and lower program payments in 2008.**

  In 2008, average net operating income was $45,500.

  Average net operating income varied from $1,100 per farm for farms with operating revenues of $10,000 to $99,999, to $364,600 for million-dollar and over operations. For these larger farms, an equal share of their operating income came from the market as came from program payments. For medium to large farms (with revenues of $100,000 to $1 million), however, program payments were the predominant source of income.

Chart C4.17
Average Net Operating Income by Revenue Class
2008



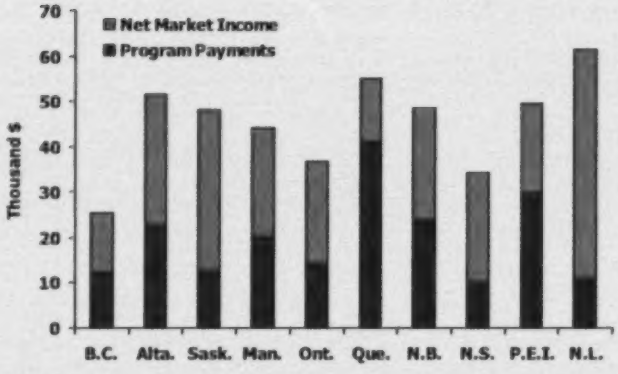
Source: Statistics Canada, Taxation Data Program and AAFC calculations.

- **Average net operating income varies significantly by province, from $25,300 per farm in British Columbia to $61,300 per farm in Newfoundland and Labrador.**

  British Columbia tends to have the highest percentage of farms that are small, consequently lower net operating income.

  The importance of program payments also differs by province. In 2008, Newfoundland and Labrador reported the lowest share of operating income from program payments, while Quebec reported the highest.

Chart C4.18
Average Net Operating Income by Province
2008



Source: Statistics Canada, Taxation Data Program and AAFC calculations.

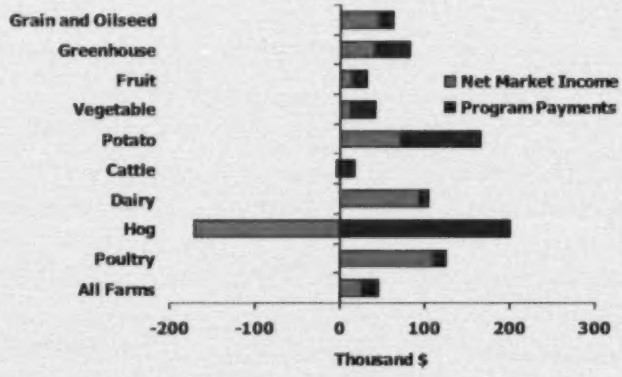
Similarly, average net operating income varies by farm type

- **Average operating income varies across farm types, and is influenced to a large degree by prices and market conditions.**

  On average, potato, poultry and dairy farms reported the highest average net operating income among farm types in 2008.

  Cattle and hog farms reported the lowest average net operating income among all farm types in 2008. Hog farms, in particular, faced serious financial difficulty and negative net market revenues due to a variety of factors, including record high feed prices and reduced demand due to an appreciated dollar, and fears of animal disease (e.g. H1N1). Program payments offset negative market revenues.

Chart C4.19
Average Net Operating Income by Farm Type
2008



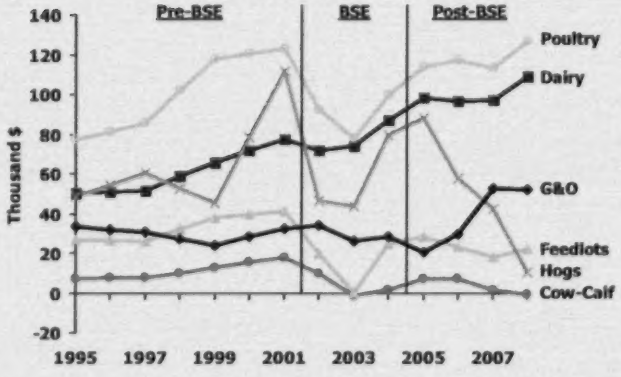
Source: Statistics Canada, Taxation Data Program and AAFC calculations.

- **Cow-calf operations tend to report lower net operating income than other farm types.**

  Overall, since most cow-calf operations are small, they tend to have low net operating income relative to other farm types.

  Average net operating income of cow-calf operations was lower than that of other farm types before the Bovine Spongiform Encephalopathy (BSE) crisis of 2003, and continues to be low.

Chart C4.20
Average Net Operating Income by Farm Type
1995-2008



Source: Statistics Canada Farm Financial Survey and AAFC calculations.

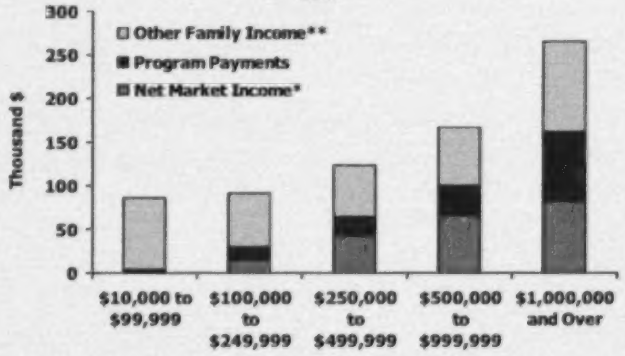
For Canadian farm families, income from non-farm sources continues to be important regardless of farm size or type

- **In 2007, all farm families reported some non-farm income.** However, families on small farms (with revenues between $10,000 and $99,000) tended to rely almost exclusively on non-farm income sources.

  For smaller farms, income from other sources, along with program payments, are enough to offset negative and low net market income.

  As farms get larger, however, farm families tend to report a larger share of their income from the market and/or program payments.

Chart C4.21
Average Income of Farm Families by Source of Income
Unincorporated Farms
2007

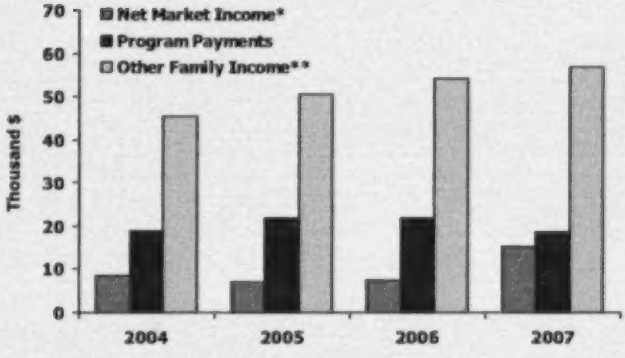


Source: Statistics Canada.

Note: * Net market income does not include capital cost allowance.
Farm wages paid to family members are treated as an expense to the farm operation; they are also recorded as income to the family by including them in salary & wage income under other family income.
Program premiums are treated as an expense to the farm operation, and are not netted out of program payments.
** Other family income is based on Farm Financial Survey data and is averaged over all farms.

- **Although the proportion of family income from the farm is relatively constant over time, the composition of this income has changed.** From 2004 to 2007, a greater share of family income came from other family income.

Chart C4.22
Average Income of Farm Families by Source of Income
Unincorporated Farms
2004-2007



Source: Statistics Canada and AAFC calculations.

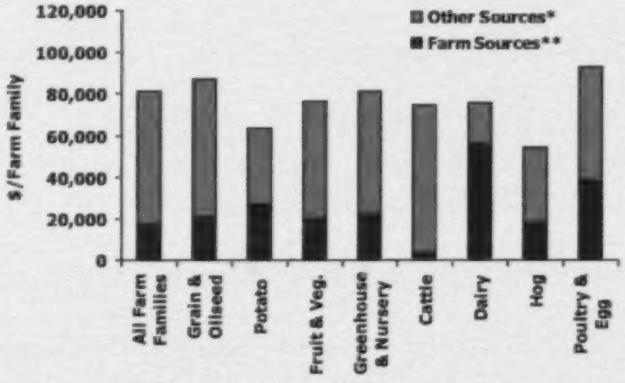
Note: * Net market income does not include capital cost allowance.
Farm wages paid to family members are treated as an expense to the farm operation; they are also recorded as income to the family by including them in salary & wage income under other family income.
Program premiums are treated as an expense to the farm operation, and are not netted out of program payments.
** Other family income is based on Farm Financial Survey data and is averaged over all farms.

But it varies by farm type as well

- **Farm families on dairy and poultry and egg farms tend to rely to a greater extent on farm sources of income than do other farm types.**

  This is because dairy and poultry and egg farms tend to be more labour intensive than other farm types. Families operating cattle (primarily cow-calf) and grain and oilseed farms, reported a higher proportion of their income from "other sources". These farm types tend to be less labour intensive, allowing for part-time employment by family members.

Chart C4.23
Average Farm Family Income by Farm Type
2007



Source: Statistics Canada, Tax Data Program, Unincorporated Farm Families and AAFC calculations.
Note: * Includes Non-Farm Wages and Salaries.
** Net Farming Income + Farm Wages and Salaries.

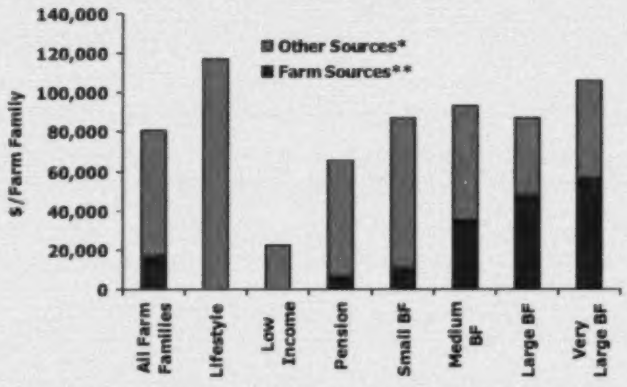
The importance of non-farm sources of family income also varies by farm typology

- **Farm typology attempts to capture the business objective of the farm.**

  Families classified as lifestyle and low income farms earned, on average, negative net farm income, leading these families to draw all of their income from other sources. Families operating lifestyle farms accounted for one in five farm families in 2007.

  Families operating farms classified as pension farms also reported a relatively small portion of their income from farming, in part reflecting their stage in life (i.e. receiving pension income). For families operating business focussed farms, the larger the farm, the lower the percentage of family income coming from other sources. This reflects their business objective.

Chart C4.24
Average Farm Family Income by Typology
2007



Source: Statistics Canada, Tax Data Program, Unincorporated Farm Families and AAFC calculations.
Note: * Includes Non-Farm Wages and Salaries.
** Net Farming Income + Farm Wages and Salaries.
BF=Business Focussed.

Chart C4.25
Definition of Farm Typology

TYPOLOGY	DEFINITIONS
SMALL FAMILY FARMS (GROSS REVENUES OF $10,000 - $249,999)	
Pension	Farms families where the operator is 65 years of age and over, and those 60 to 64 receiving pension income. Multi-generational farms are excluded.
Lifestyle	Farm families operating farms with gross farm revenues of $10,000 to $49,999, and whose farm family earns $50,000 or more from non-farm sources of income.
Low Income	Farm families with total household income below Statistics Canada's Low Income Measure (LIM).
Business Focussed	Farms with $10,000 to $249,999 in gross revenues that do not fall in any of the three previous categories.
Small Business Focussed	Farms with gross revenues of $10,000 to $99,999.
Medium Business Focussed	Farms with gross revenues of $100,000 to $249,999.
LARGE-SCALE FAMILY FARMS (GROSS REVENUES OF $250,000 OR MORE)	
Large Business Focussed	Farms with gross revenues of $250,000 to $499,999.
Very Large Business Focussed	Farms with gross revenues of $500,000 or more.
Non-family Farms	Farms organized as non-family corporations, co-operatives or communal operations. Also includes farms held in estates or trusts.

Source: Statistics Canada Farm Financial Survey 2007.
Note: Typology definitions have changed from previous years so they are not directly comparable. Hobby farms, those with less than $10,000 in gross revenues, are not included in this breakdown.

NOTE(S):

"Other" sources of farm family income combine estimates for non-farm wages and salaries with other non-farm income. On the other hand, "farm" sources include an estimate of farm wages and salaries.

Farm family income has traditionally been below urban non-farm family income, but has risen more sharply in recent years

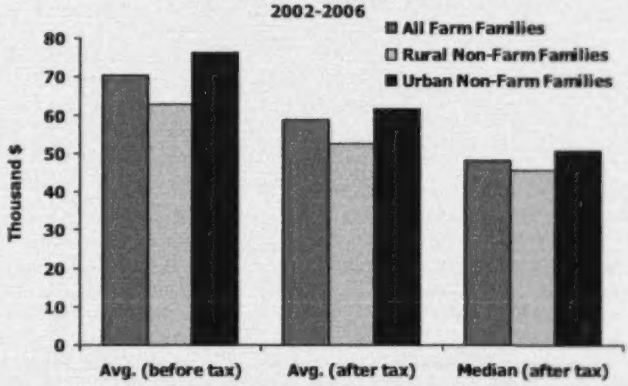
- **Family income of farm families was above rural non-farm families but below that of urban non-farm families over the five-year period 2002 to 2006.**

  Average total family income was $58,600 for farm families compared to $52,500 for rural non-farm families and $61,500 for urban non-farm families, over the period 2002 to 2006.

  When median income is considered, family income was $48,000 for farm families compared to $45,500 for rural non-farm families and $50,500 for urban non-farm families.

  However, the cost of living in rural areas is much lower than in urban areas. According to the Statistics Canada 2007 Survey of Household Spending, average household spending on food, clothing and shelter was $19,726 in rural areas compared with $24,817 in urban areas.

Chart C4.26
Family Income of All Farm-Rural-Urban Non-Farm Families 2002-2006



Source: Statistics Canada, Longitudinal Administrative Databank (LAD).

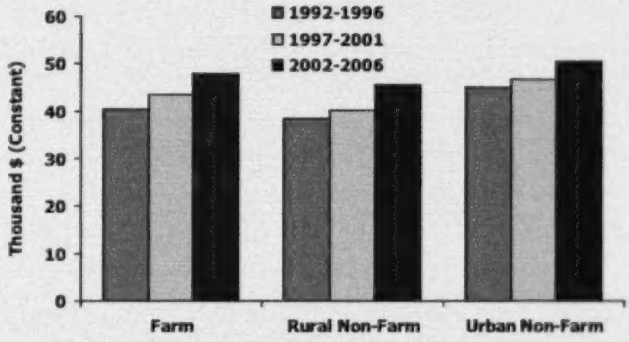
Note: 1) For unincorporated sector only.
2) Farm families are families that reported gross farming income/revenue greater than zero from an unincorporated farm.

- **Relative to other families, the income of families with an unincorporated farm has risen more steeply in recent years.**

  Median after-tax family income increased for all family types over the periods, 1992 to 1996 and 2002 to 2006.

  Most of the gains in farm family income came after 2001.

Chart C4.27
Median After Tax Farm-Rural-Urban Non-Farm Family Income 1992-1996, 1997-2001 and 2002-2006



Source: Statistics Canada, Longitudinal Administrative Databank (LAD).

Note: 1) For unincorporated sector only.
2) Farm families are families that reported gross farming income/revenue greater than zero from an unincorporated farm.

NOTE(S):

Median family income is that level of family income where there are an equal number of families with income below that level as there are above it.

Average family income is that income level derived by dividing total family income by the number of families.

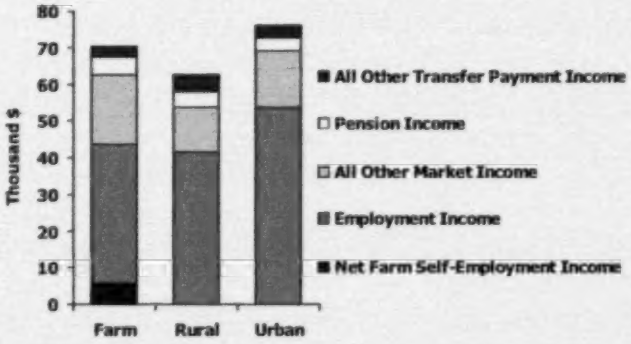
Sources of family income and income distribution vary by family type

- **Employment and other market income made up the largest share of family income for all family types.**

  On average, families operating farms reported $5,700 in income from the farm operation, but the bulk of other income came from employment and other market income.

  Urban non-farm families reported the highest employment income, but transfer payment income and pension income were comparable across family types.

Chart C4.28
Before Tax Family Income by Source, Farm-Rural-Urban Non-Farm Families 2002-2006



Source: Statistics Canada, Longitudinal Administrative Databank (LAD).

Notes: 1) For unincorporated sector only.
2) Farm families are families that reported gross farming income/revenue greater than zero from an unincorporated farm.

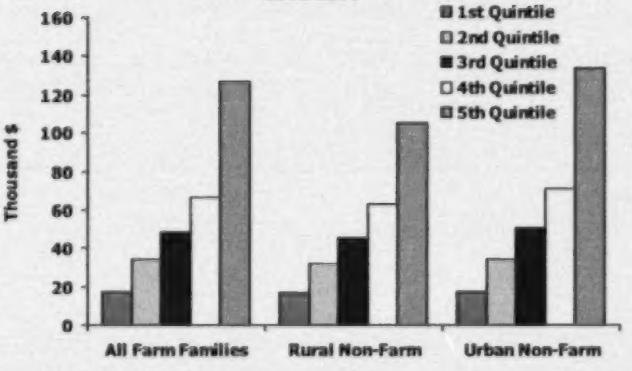
- **Urban families reported the greatest income disparity between the top and bottom family income quintiles.**

  Average after-tax family income for families in the bottom income class (1st quintile) was comparable, ranging from $17,000 to $17,400.

  As a result, the difference in income between the top and bottom income quintiles was greatest for urban non-farm families, the gap was $116,000 per family. This compares with $88,000 for rural non-farm families and $110,000 for farm families. However, the family income of the top income class (5th quintile) varied widely by family type.

  Family income for families in the highest income class (5th quintile) ranged from $105,300 for rural non-farm families to $133,900 for urban non-farm families and $127,000 for farm families.

Chart C4.29
Average After Tax Family Income by Quintile of Family Income 2002-2006



Source: Statistics Canada, Longitudinal Administrative Databank (LAD).

Note: 1) For unincorporated sector only.
2) Farm families are families that reported gross farming income/revenue greater than zero from an unincorporated farm.

NOTE(S):

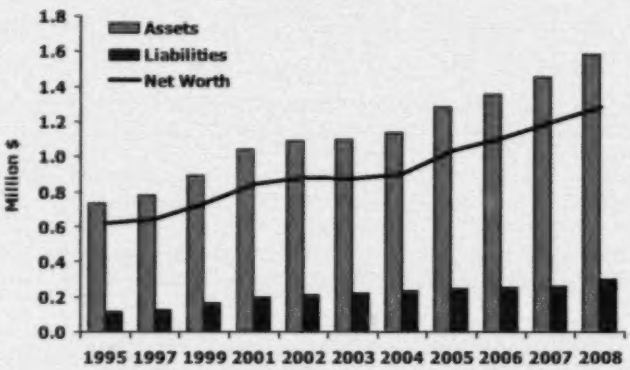
Quintile: Households are ranked in ascending order by total household income and are divided into five equal groups. The 1st quintile is the lowest 20% of households and the 5th quintile is the highest 20% of households.

Overall, the financial well-being of farms takes into account both income and net worth measures

- **Average net worth per farm, which has been rising over time, varies by province and farm type.**

  In Canada, average net worth per farm continued to increase steadily over the last few years after declining in 2003. In 2008, average net worth per farm was $1.3 million, up 8% over 2007.

Chart C4.30
Average Total Net Worth by Farm Type
1995-2008



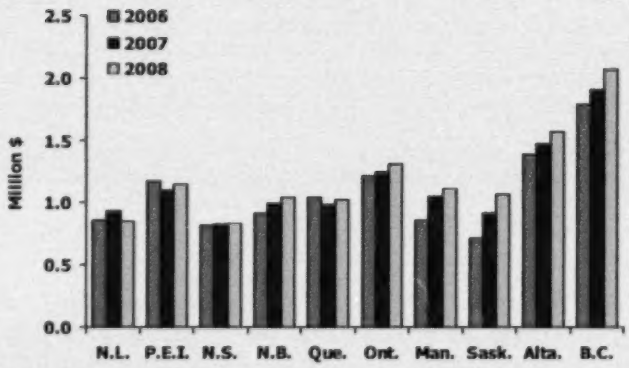
Source: Statistics Canada Farm Financial Survey, various years and AAFC calculations.
Note: Includes farms with $10,000 or more in gross revenues.

- **Average net worth increased in some provinces in 2008 compared to 2007 and 2006, but declined in others.**

  Average net worth per farm was up sharply in Ontario, British Columbia and the Prairie Provinces. It was down in Newfoundland and Labrador, Prince Edward Island and Quebec, but stable in Nova Scotia.

  Saskatchewan reported the largest percentage increase in net worth, partially due to the large increase in the value of farmland and buildings in recent years.

Chart C4.31
Average Farm Total Net Worth by Province
2006-2008



Source: Statistics Canada Farm Financial Survey, various years and AAFC calculations.
Note: Includes farms with $10,000 or more in gross revenues.

Some farm types have higher net worth because they tend to have larger farms

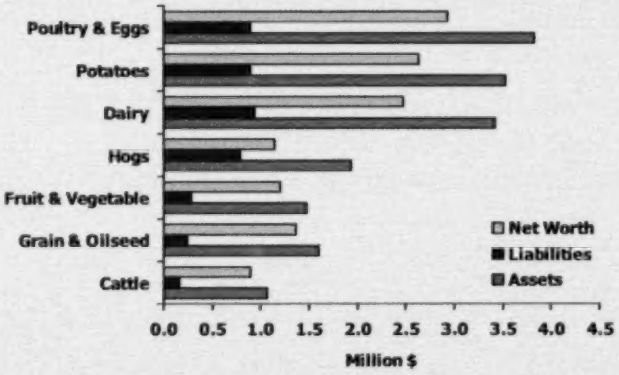
- **Poultry and egg, potato and dairy farms reported the highest average net worth per farm, at over $2 million in 2008.**

  This also reflects the fact that dairy and poultry and egg farms require quotas to operate their farms which contribute to higher asset levels.

  Cattle farms reported the lowest average assets, liabilities and net worth of all farm types.

  Average assets and liabilities were significantly lower for hog, grain and oilseed and fruit and vegetable farms.

Chart C4.32
Average Assets, Liabilities and Net Worth by Farm Type
2008

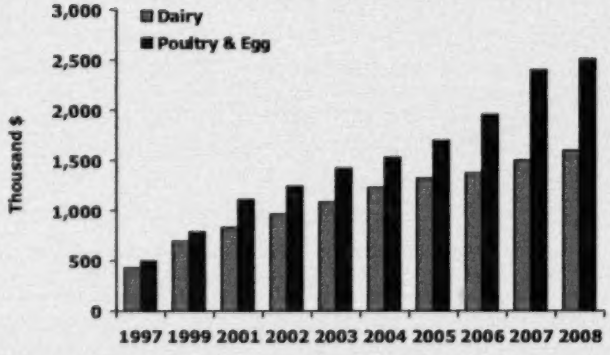


Source: Statistics Canada Farm Financial Survey, 2008 Reference Year and AAFC calculations.
Note: Includes farms with $10,000 or more in gross revenues.

- **Quota values for poultry and egg farms rose quickly over the last few years.**

  In 2008, dairy farms reported holding $1.6 million worth of quota, on average, while poultry farms reported average quota values of around $2.5 million. Quotas accounted for approximately 46% and 56% of total farm assets, respectively. Quotas are required to produce milk, and poultry and eggs in Canada.

Chart C4.33
Average Quota Value of Supply-Managed Farms
1997-2008



Source: Statistics Canada Farm Financial Survey, various years and AAFC calculations.
Note: Includes farms with $10,000 or more in gross revenues.

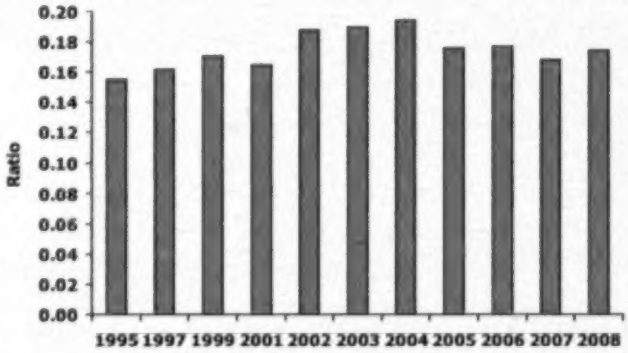
The overall financial health of farm businesses depends on how they manage their debt

- **The debt to asset ratio reflects, to some degree, the farm's financial risk and how much of the farm assets have been financed by debt.**

  Over the past few years, the debt to asset ratio has remained relatively stable and below the high levels reported in 2004.

  Interest rates are at historically-low levels, helping keep debt-servicing costs down.

Chart C4.34
Debt to Asset Ratios* for All Farms
1995-2008

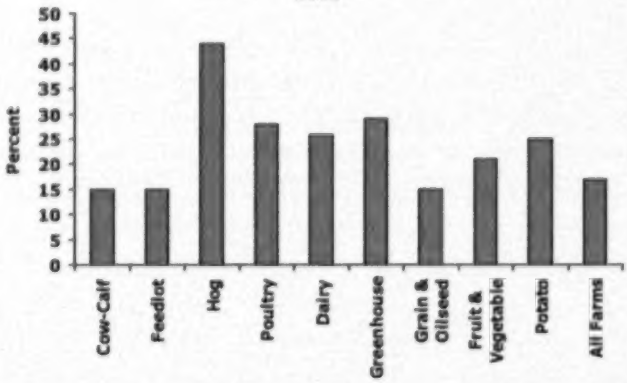


Source: Statistics Canada Farm Financial Survey, various years and AAFC calculations.
Note: Includes farms with $10,000 or more in gross revenues.
*Average per farm.

- **In 2008, cow-calf operations and feedlots reported the lowest debt to asset ratios (15%) among all farm types, while hog farms reported the highest (45%).**

  In 2008, hog farms reported the highest debt to asset ratios, reflecting the significant debt they accumulated during the expansion of operations in the early 2000s.

Chart C4.35
Debt to Asset Ratios by Farm Type
2008



Source: Statistics Canada, Farm Financial Survey.

SECTION C5

Inputs to Primary Agriculture

INTRODUCTION:

Input and service suppliers, ranging from multinational firms and commodity brokers to small local businesses, play a major role in the Canadian agriculture and agri-food system. Higher fuel prices and increasing demand have contributed to rising input prices globally with significant implications for operating expenses. In order to reduce operating expenses many producers purchase inputs through co-operatives, during off-season periods, or adopt energy-efficient practices.

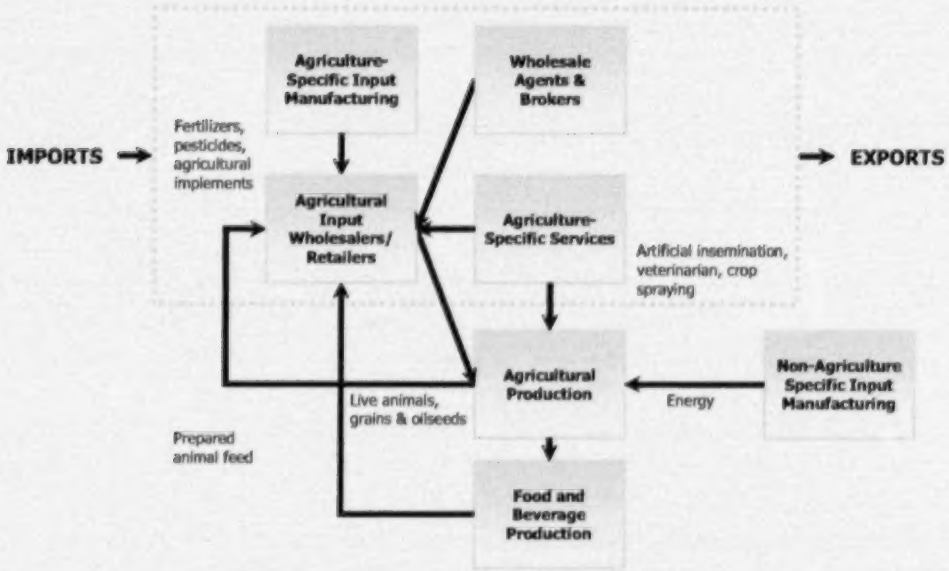
Input suppliers are a whole chain unto themselves

- **Agriculture-specific input and service suppliers constitute a whole value chain within the agriculture and agri-food system. They include input manufacturers, service providers, and retailers/wholesalers.**

  They supply and support primary agriculture and, at the same time, act as buyers of products from downstream industries (e.g. prepared animal feed from grain and oilseed mills or feeder calves from cow-calf operations).

  Agriculture-specific input and service suppliers are heterogeneous. They range from multinational firms producing agricultural machinery and implements, to small local businesses selling feed and pesticides, and from international commodity brokers to the next-door neighbour doing custom work.

Chart C5.1
The Value Chain of Agriculture-Specific Input and Service Suppliers



Source: AAFC.

Farm expenses fell slightly in 2009 from 2008, as input prices decreased due to the global recession

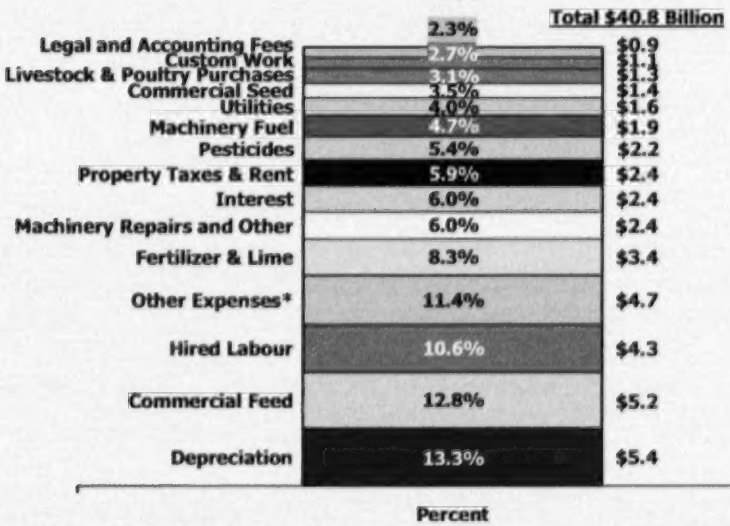
- **In 2009, farm net operating expenses and depreciation totalled $40.8 billion.**

  Agriculture producers spent $35.3 billion on operating expenses before rebates and incurred $5.4 billion in depreciation charges.

  Depreciation was the largest individual expense for agriculture producers in 2009, followed by commercial feed ($5.2 billion), hired labour ($4.3 billion) other expenses ($4.7 billion) and fertilizer and lime at $3.4 billion.

  Higher feed costs also affected livestock producers in particular.

Chart C5.2
Farm Net Operating Expenses and Depreciation
2009


Total $40.8 Billion
Legal and Accounting Fees 2.3% $0.9
Custom Work 2.7% $1.1
Livestock & Poultry Purchases 3.1% $1.3
Commercial Seed 3.5% $1.4
Utilities 4.0% $1.6
Machinery Fuel 4.7% $1.9
Pesticides 5.4% $2.2
Property Taxes & Rent 5.9% $2.4
Interest 6.0% $2.4
Machinery Repairs and Other 6.0% $2.4
Fertilizer & Lime 8.3% $3.4
Other Expenses* 11.4% $4.7
Hired Labour 10.6% $4.3
Commercial Feed 12.8% $5.2
Depreciation 13.3% $5.4
Percent

Source: Statistics Canada.

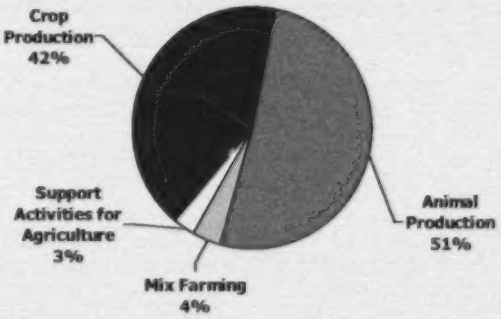
Note: *Other Expenses is the sum of smaller-value categories including: Repairs to Buildings and Fences, Irrigation, Twine, Wire and Containers, Crop and Hail Insurance, Artificial Insemination Fees & Veterinary, Business Insurance, and Stabilization Premiums.

Labour is an important input into farming

- **In 2009, over 300,000 people were working in primary agriculture, making up almost 2% of the total Canadian labour force.**

  Animal production accounted for the largest share of primary agriculture employment, making up about 51% of the total.

Chart C5.3
Distribution of Primary Agriculture Employment by Sector
2009



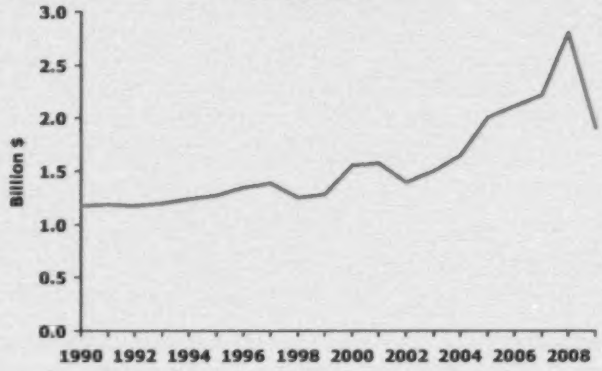
Source: Statistics Canada

The global economic recession lessened demand and the cost of many farm inputs in 2009

- **Fuel costs are normally an important cost of production for primary producers.**

  However, farm expenses on machinery fuel declined significantly in 2009. The global economic recession, which depressed world energy demand, contributed to weaker oil prices and lower fuel costs in 2009.

Chart C5.4
Farm Expenses on Machinery Fuel
1990-2009

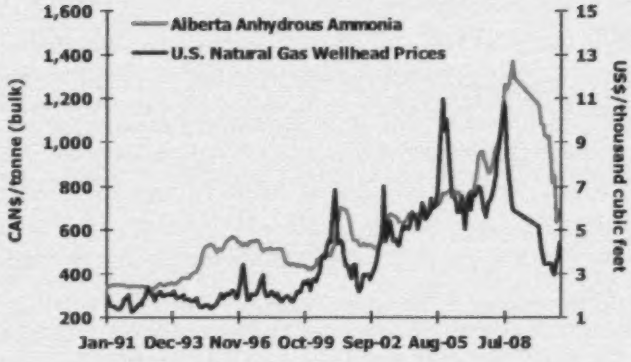


Source: Statistics Canada.

- **Fertilizer prices are primarily determined by demand, supply and production costs.**

  Nitrogen fertilizer prices generally closely follow natural gas prices. This is because natural gas is a major component of fertilizer production and makes up a significant part of its input costs. In 2009, the price of nitrogen fertilizer fell substantially due to weaker energy demand that reduced the price of natural gas. Declines in crop prices also contributed to the reduced demand for fertilizer.

Chart C5.5
Anhydrous Ammonia and Natural Gas Prices
1991-2009



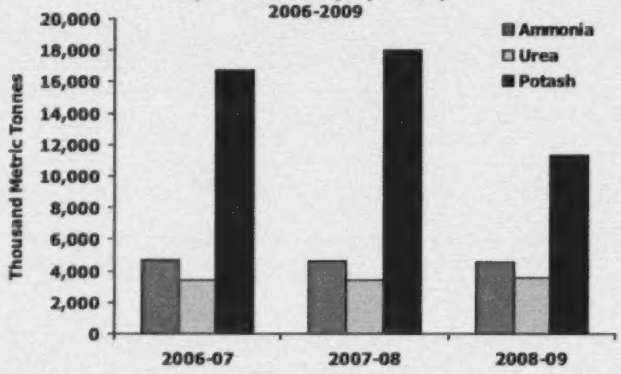
Source: Alberta Agricultural Input Monitoring System (AIMS) and the United States Energy Information Administration.

Western Canada is the primary producer, consumer and exporter of fertilizer in the country

- **Canada is one of the largest producers and exporters of potash in the world and is also a net exporter of ammonia and urea.**

  The majority of Canadian fertilizer is produced in western Canada. In 2008-09, potash production fell significantly following a large drop in export demand because of the global economic recession.

Chart C5.6
Fertilizer Production
by Fertilizer Year (July to June)
2006-2009

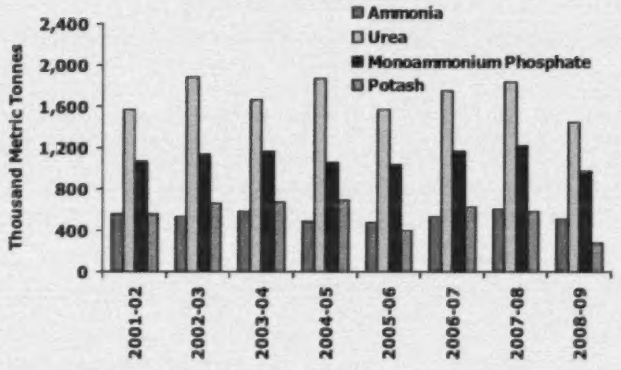


Source: Statistics Canada and the Canadian Fertilizer Institute.

- **Urea and monoammonium phosphate are the major fertilizers consumed in Canada, with the majority of consumption occurring in western Canada.**

  Following the decline in crop prices in 2009, fertilizer shipments in 2008-09 declined for ammonia, urea, monoammonium phosphate and potash compared to 2007-08.

Chart C5.7
Fertilizer Shipments in Canada
by Fertilizer Year (July to June)
2001-2009



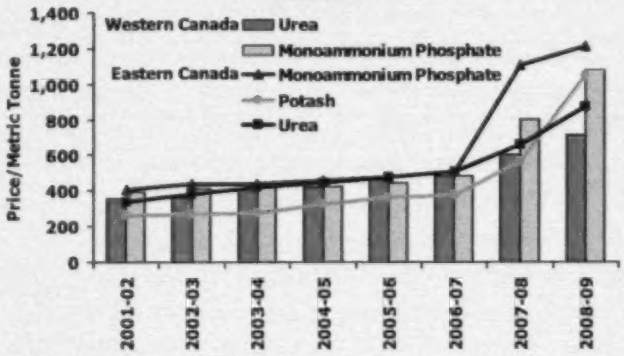
Source: Statistics Canada and the Canadian Fertilizer Institute.

In 2009, the rise in fertilizer prices slowed in Canada after large increases in previous years

- **Following a significant rise in fertilizer prices between 2006-07 and 2008-09, prices for urea and monoammonium phosphate in both eastern and western Canada declined in 2009-10 to price levels previously observed in 2006-07.**

  However, in 2008-09 potash prices in eastern Canada were still well above price levels observed before the price spike began in 2006-07.

Chart C5.8
Fertilizer Prices by Region
by Fertilizer Year (July to June)
2001-2009



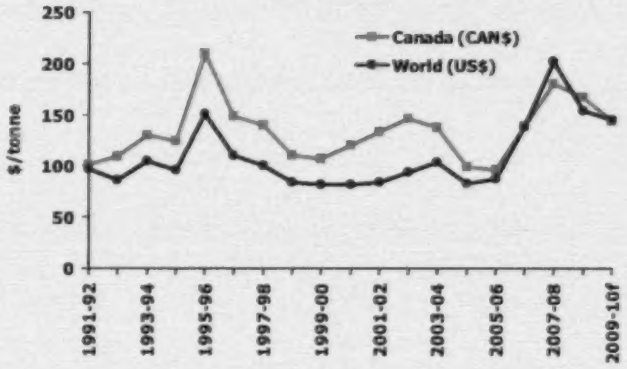
Source: Ridgetown Survey, Alberta Input Monitoring System.

In 2009, feed costs fell for livestock producers but feeder cattle prices have not rebounded

- **In the 2009-2010 crop year, world feed grain prices fell significantly for the second consecutive year, due mainly to higher stocks, stronger demand and a weaker U.S. dollar.**

  In Canada, feed grain prices also fell significantly but less than in the world market, as a result of the stronger Canadian dollar.

Chart C5.9
Canadian and World Feed Grain Prices
1991-2009

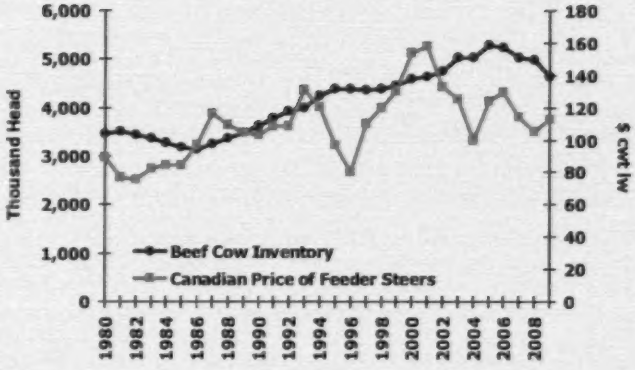


Source: University of Guelph, Ridgetown College and Chicago Board of Trade.
Note: Cumulative average for 2009-2010 Sept - Aug crop year as of May 7th.

- **Beef cow inventories are influenced by the price of feeder cattle. The difficulties involved in selling cows at reasonable prices between 2003 and 2005 prompted producers to keep a large number of cows.**

  In 2005, the resuming of trade in young cattle, including beef heifers, began to ease the inventory build-up. Lower prices of feeder cattle also dampened the strong herd growth seen during the past 18 years. The drought and world economic recession in 2009 extended the period of herd liquidation.

Chart C5.10
Canadian Feeder Calf Prices
1991-2009



Source: Statistics Canada, Canfax and AAFC calculations.

SECTION C6

Natural Resource Use and Environmental Impacts

INTRODUCTION:

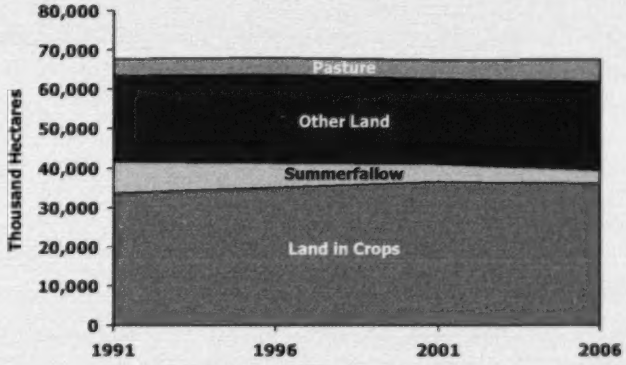
Agricultural production depends on the availability and quality of natural resources such as land and water. Agricultural production also depends on cropping choices, farming practices and input use patterns, which also depend on the decisions farmers make around market conditions.

In Canada, technological change and better land management have supported an increase of land in crops and a reduction in the area under summerfallow

- **Use of summerfallow has declined as farmers make more intensive use of their land with longer rotations in seeded crops, and adopt environmentally-friendly management practices such as no-till and conservation tillage.**

  Summerfallow area decreased by 56% between 1991 and 2006, while land in crops and pasture increased by 7.2% and 37.5%, respectively over the same period.

Chart C6.1
Canadian Agricultural Land Use
1991-2006

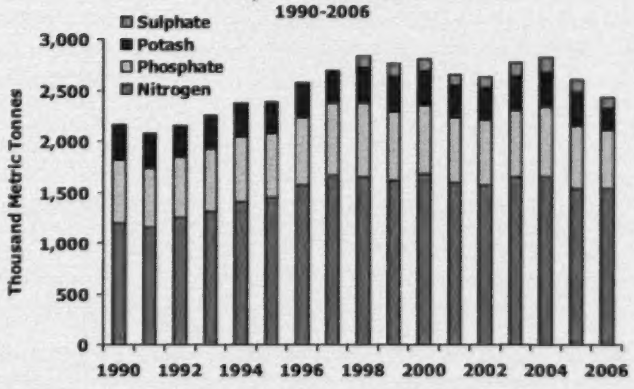


Source: Statistics Canada, Census of Agriculture, 2006.

- **The increase in land in crops that accompanied the reduction in summerfallow together with the desire to maintain soil fertility levels through intensification of cropping systems have led to an increase in fertilizer use.**

  Fertilizer consumption increased from 2.2mt in 1990 to 2.4mt in 2006. Nitrogen fertilizer use has increased by 29% over the 1990 to 2006 period.

Chart C6.2
Fertilizer Shipments to Canadian Agriculture Markets
by Nutrient Content
1990-2006



Source: Statistics Canada and AAFC calculations.

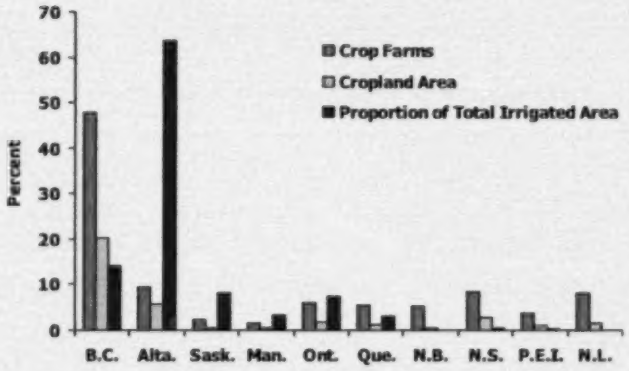
Canada depends mainly on rainfall, even in the semi-arid Prairies, and only a small portion of cropland is irrigated

- **In 2006, only 8.5% of crop farms reported using irrigation, and these farms accounted for only 2.4% of total cropland area.**

  Alberta is the province with the largest irrigated area, accounting for 64% of the national total, followed by British Columbia at 14%.

  However, irrigation accounts for a small share of overall cropland in each province except in British Columbia, where 20% of cropland area is irrigated.

Chart C6.3
Proportion of Crop Farms and Cropland Area Using Irrigation
2006



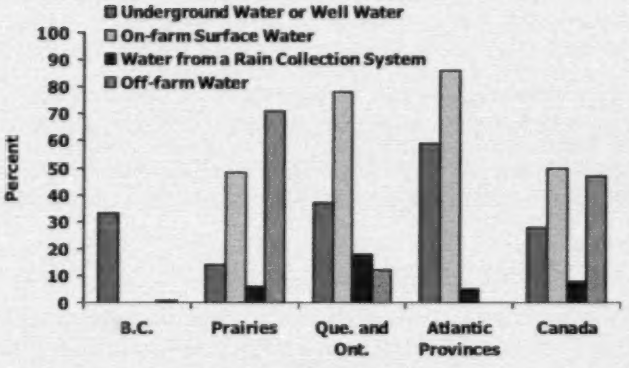
Source: Statistics Canada, Census of Agriculture 2006 and AAFC calculations.

- **Irrigated farms in the western provinces depend on off-farm water sources, while irrigated farms in the eastern provinces mainly use on-farm water sources for agricultural activities.**

  Off-farm water is transported by pipes, canals and/or aqueduct systems to bring water from suitable sources.

  British Columbia is unique in that it is the only province where more farms use groundwater from wells instead of on-farm surface water to irrigate their cropland.

Chart C6.4
Water Sources of Irrigated Farmland
2007



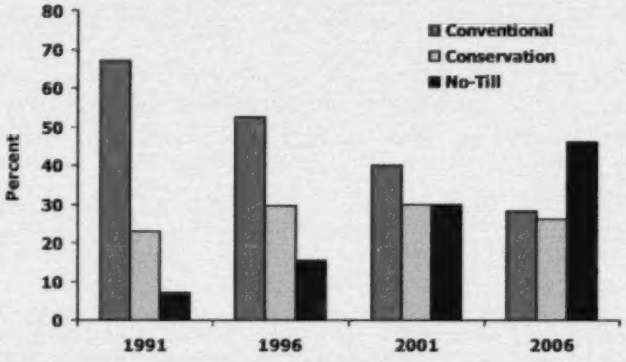
Source: Statistics Canada, Agricultural Water Use Survey and AAFC calculations.

More farmers are adopting environmentally-friendly management practices, which are both economically beneficial and agronomically sound

- **No-till practices are becoming very popular as they reduce input costs and protect soil from erosion by wind and water.**

  No-till cultivation is now the dominant practice, with almost 50% of cropland under this practice in 2006. Use of conventional tillage decreased by 59% since 1991. In 2006, about 70% of cropland in Canada was cultivated using no-till or conservation tillage, mainly on the Prairies.

Chart C6.5
Tillage Practices
1991-2006

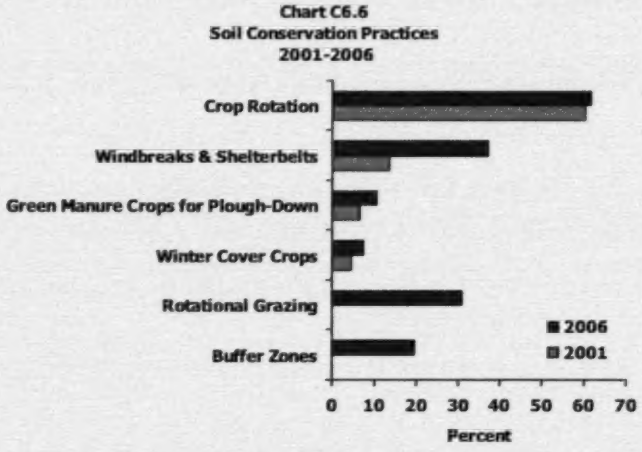


Source: Statistics Canada, Census of Agriculture, various years.

- **More farmers reported using soil conservation practices in 2006 than in 2001.**

  In addition to no-till and conservation tillage, crop rotation remains the most common soil conservation practice, followed by treed windbreaks and shelterbelts and rotational grazing.

Chart C6.6
Soil Conservation Practices
2001-2006



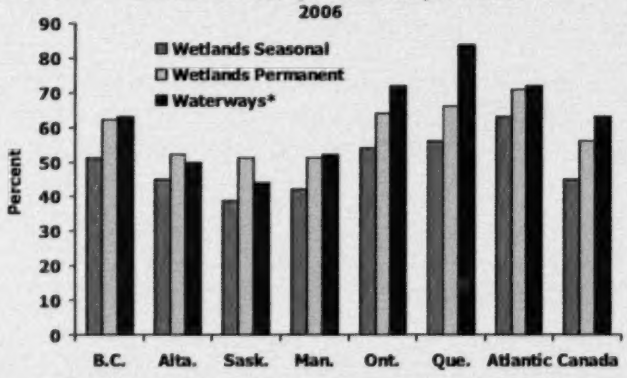
Source: Statistics Canada, Census of Agriculture, 2001 and 2006.

More agricultural producers are taking significant steps to protect water quality

- **A majority of farmers with land areas adjacent to natural sources of water indicated they are maintaining a riparian buffer around permanent wetlands and waterways on their land.**

  This water protection practice is being increasingly adopted across the country. In 2006, maintaining a riparian buffer was slightly more widespread in eastern Canada.

Chart C6.7
Percent of Farms with Wetlands and Waterways that Maintained a Riparian Buffer by Province 2006

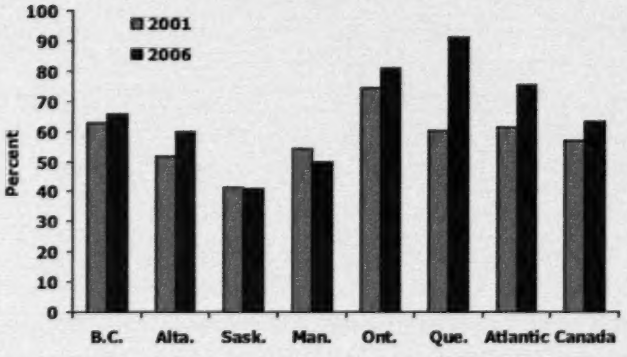


Source: Statistics Canada, Farm Environmental Management Survey 2006 and AAFC calculations.
Note: *Creeks, ditches, grassed waterways, etc.

- **In general, a greater extent of farmers have been controlling the access of their livestock to surface water.**

  Between 2001 and 2006, with the exception of Saskatchewan and Manitoba, more livestock farmers reported adopting restricted access to surface water, with those in Quebec and the Atlantic Provinces reporting the largest increases.

Chart C6.8
Percent of Grazing Livestock Farms with Controlled Access to Surface Water by Province 2001 and 2006



Source: Statistics Canada, Farm Environment Management Survey, 2001 and 2006 and AAFC calculations.

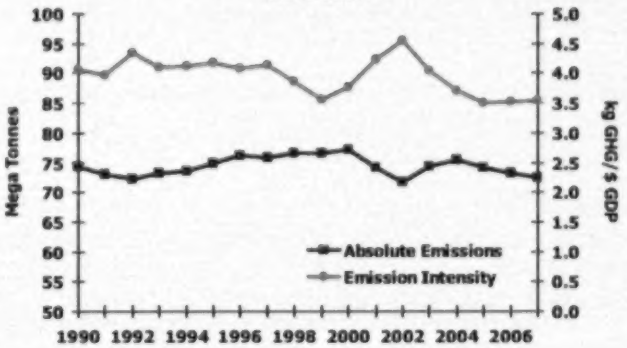
Canada's agricultural sector has adopted practices that reflect a low carbon pathway

- **Absolute emissions from the agriculture sector declined by 2.6% (1.95 MT) over the 1990-2007 period.**

  Emission intensity, as measured by the amount of greenhouse gases (GHGs) emitted per unit of economic activity, decreased more dramatically by 13.3% over the same period.

  GDP of the agricultural sector grew by 12% between 1990 and 2007.

Chart C6.9
Emissions and Emission Intensity of the Agriculture Sector 1990-2007

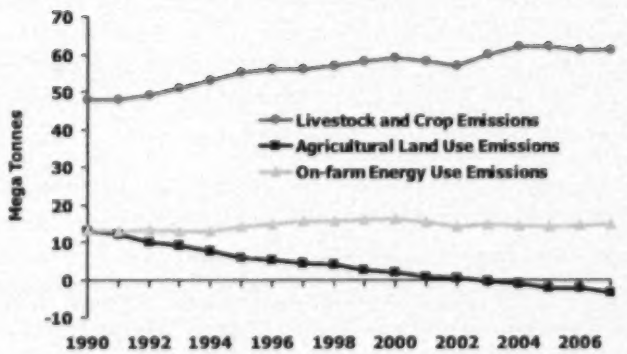


Source: Environment Canada, National Inventory Report and Natural Resources Canada, National Energy Database, 1990-2007.

- **Reductions in greenhouse gas (GHG) emissions from land use (-17 MT) over the 1990 to 2007 period were offset by the increase in absolute GHG emissions from livestock and crop production (+14 MT) over the same period.**

  The main drivers of the trend upwards in GHG emissions from livestock and crops were the expansion of the beef cattle and swine populations, and increases in the application of synthetic nitrogen fertilizers on the Prairies.

Chart C6.10
Emission Trends by Category 1990-2007



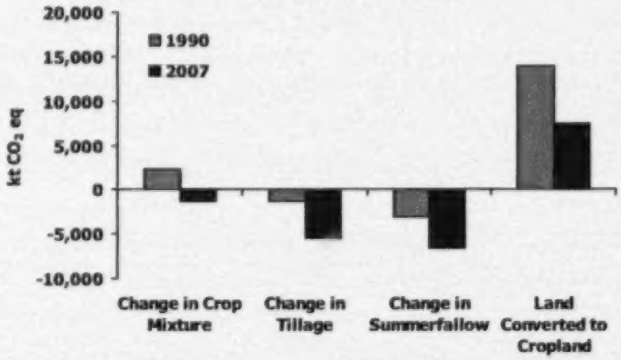
Source: Environment Canada, National Inventory Report and Natural Resources Canada, National Energy Database, 1990-2007.

Productivity gains and changes in management practices over time, have resulted in a significant reduction in emissions per unit of agricultural production activity

- **On the crop production side, changes in crop mix, reduced summerfallow, tillage practices and the decline of land converted to cropland explain the decrease of net GHG flux in agricultural land use emissions over time.**

  Between 1990 and 2007, the area of summerfallow declined while the area under no-till and reduced tillage has increased. Over the same period, there was a net increase in area with perennial crops and a net decline in forestland being converted to cropland.

Chart C6.11
Emissions and Removals Associated with Land Management Changes 1990 and 2007

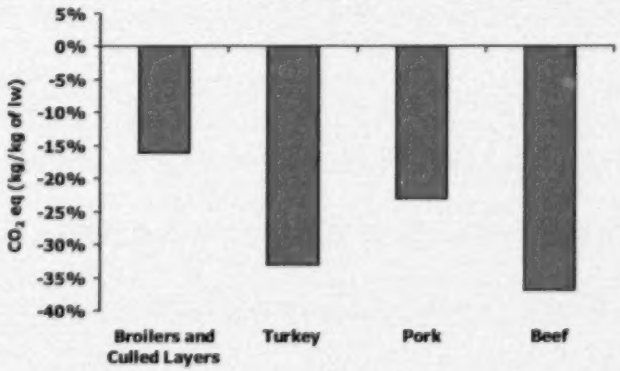


Source: Environment Canada, National Inventory Report.

- **On the livestock production side, GHG emissions per kg of live animal produced have also decreased over time, reflecting productivity gains in animal production from research on animal genetics and management practices.**

  Beef and turkey production have experienced the biggest reduction in their per-unit emissions over the 1981-2006 period, with a reduction of 37% and 33%, respectively.

Chart C6.12
Percentage Change of Emissions per Unit of Production 1981-2006



Source: Vergé, X.P.C, Dyer, J.A., Desjardins, R.L., and Worth, D.E., 2008 and 2009.

Adopting environmentally-friendly management practices have impacts on soil, water, and air quality

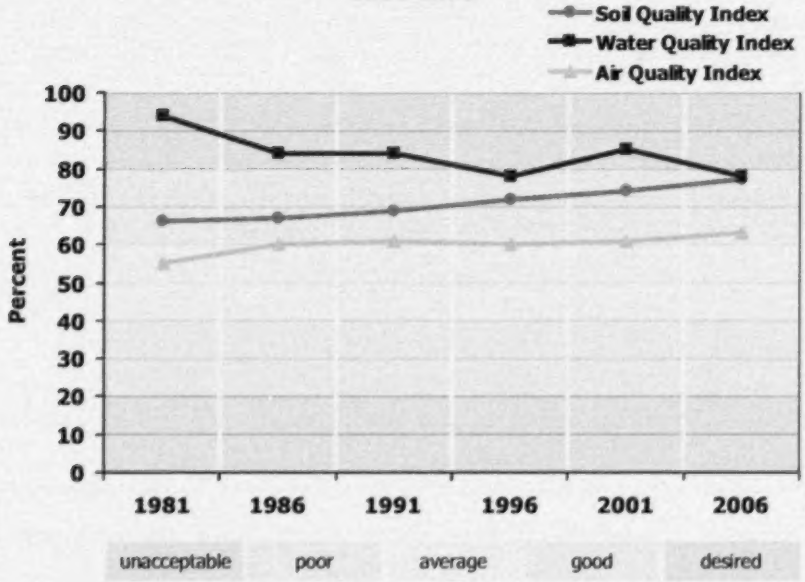
- **Overall, the results suggest that progress has been made towards environmental sustainability.**

Agriculture's environmental performance in soil quality is measured by the Soil Quality Index that combines indices for risk of soil erosion, risk of soil salinization, risk of soil contamination by trace elements and change in soil organic carbon. The Soil Quality Index has a "desired" status, and generally improved over the 25-year period preceding 2006 with enhancements in land management practices. The improved performance was largely driven by the western provinces, where cultivated agriculture is extensive and dominated by cereals and oilseed crops.

The Air Quality Index combines indices for GHG, particulate matter and ammonia emissions from agriculture. The performance in air quality has provided an "average" status that showed a gradual improvement from 1981 to 2006. Again, enhancements in land management practices were primarily responsible for this improvement. Adoption of these practices, particularly on the Prairies, led to soils becoming a net sink for atmospheric carbon and those removals compensate for the increased emissions from livestock.

The Water Quality Index combines indices for risk of water contamination by nitrogen, phosphorus, coliforms and pesticides. This overall index for the risk to water quality currently has a "good" status. However, this represents an overall decline over the 25 years under study. Increased application of nutrients (N and P) as fertilizer and manure was the main driver for the declining trend in the performance index for water quality throughout Canada.

Chart C6.13
Agri-Environmental Performance Indexes
1981-2006



Source: Eilers, W., Mackay, R., Graham, L. and Lefebvre, A. (eds). 2010.

Agricultural land makes a significant contribution to biodiversity

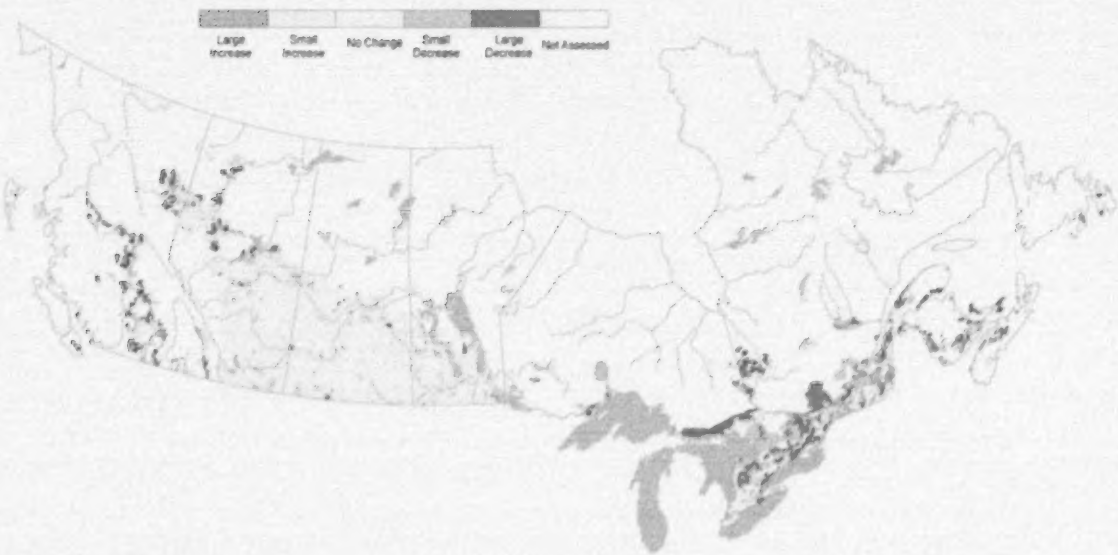
- **The varied areas associated with agricultural land provide valuable habitats for many wildlife species across Canada.**

  Nationally, wildlife habitat capacity on farmland declined slightly between 1986 and 2006.

  The loss of natural and semi-natural land cover, and the intensification of agricultural operations, resulted in a decline in overall habitat capacity by about 3%. However, in recent years, farmers have adopted many beneficial management practices (BMPs) that can improve and support biodiversity on agricultural landscapes such as using windbreaks and buffer zones.

  The indicator of associating land area, land use and habitat capacity improves our understanding of how sectoral, market and policy issues can affect the availability of wildlife habitat on agricultural lands.

Chart C6.14
Wildlife Habitat Capacity Change
1986-2006



Source: Environment Canada, National Inventory Report.

SECTION D

Government and the Agriculture and Agri-Food Sector

SECTION D1

Government Expenditures

INTRODUCTION:

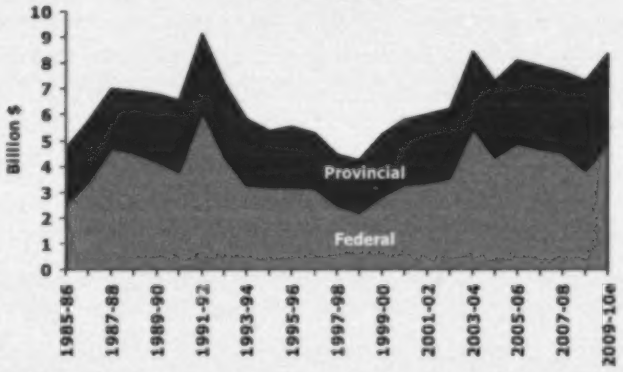
Government expenditures (federal and provincial) in support of the agriculture and agri-food sector are expected to increase in 2009-10. As a share of sector GDP, government expenditures are estimated to fall to 34%, a decrease from 2007-08. Program payments made up the largest portion of government expenditures to the sector.

Government expenditures in support of the agriculture and agri-food sector have grown over time but have declined as a share of total GDP

- **Federal and provincial governments provide a significant level of support to the agriculture and agri-food sector in Canada, with the federal government contributing 59% of expenditures over the whole period.**

  Total government expenditures in support of the agriculture and agri-food sector are estimated to be $8.4 billion for the 2009-10 fiscal year. This is up by more than one billion from the previous year, with federal support increasing while provincial support declined.

Chart D1.1
Government Expenditures
in Support of the Agriculture and Agri-Food Sector
1985-86 to 2009-10

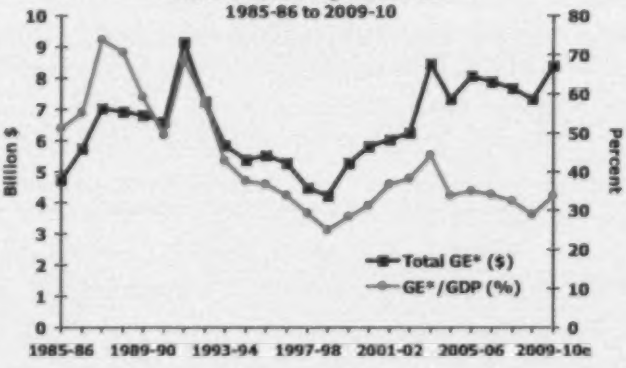


Source: AAFC.
Note: 2009-10 figures are estimates.

- **Government expenditures in support of the agriculture and agri-food sector are expected to increase, both in dollar terms and as a share of GDP in 2009-10.**

  During the 1990s, government expenditures declined, both in dollar terms and as a share of agriculture and agri-food GDP. Since 1999-00, both indicators increased until 2003-04. After this, government expenditures stabilized in dollar terms and fell as a share of agriculture and agri-food GDP until 2009-10, when they both increased.

Chart D1.2
Government Expenditures in Support of
the Agriculture and Agri-Food Sector
and as a Share of Agriculture GDP
1985-86 to 2009-10



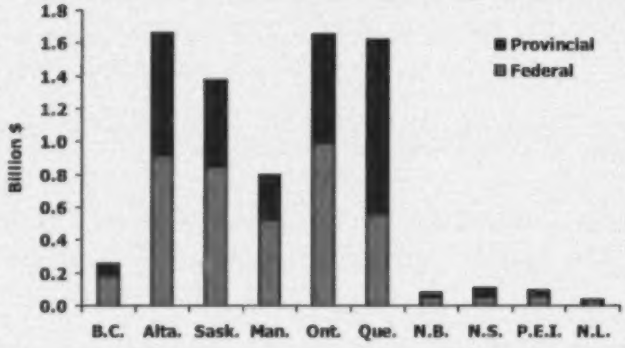
Source: AAFC.
Note: 2009-10 figures are estimates.
*GE: Government Expenditures.

Government expenditures in support of the agriculture and agri-food sector vary by province

- **The federal government is expected to contribute more than half of total support in many of the provinces in the 2009-10 fiscal year.**

  However, the provincial government in Quebec is expected to provide more than half of total support to the sector.

Chart D1.3
Government Expenditures in Support of the Agriculture and Agri-Food Sector by Province
2009-10

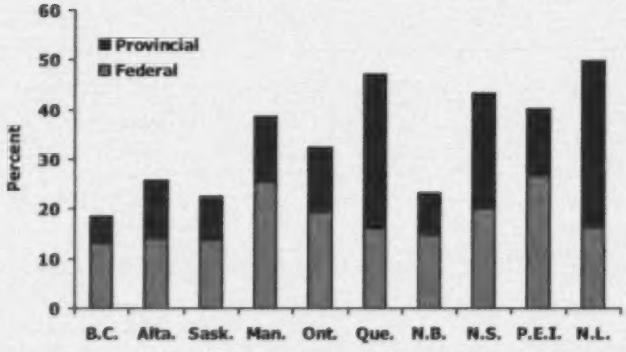


Source: AAFC.
Note: 2009-10 figures are estimates.

- **In the 2009-10 fiscal year, government expenditures in support of the agriculture and agri-food sector in Canada were estimated at 33.7% of agriculture and agri-food sector GDP, but this share varied across provinces.**

  Government support, as a share of GDP, to the agriculture and agri-food sector in Newfoundland and Labrador, Quebec, Nova Scotia, Manitoba and Prince Edward Island is expected to be higher than the average (33%) at between 40 and 50% of provincial agriculture and agri-food GDP, while that in British Columbia, Alberta, Saskatchewan, and New Brunswick will be lower than average.

Chart D1.4
Government Expenditures in the Agriculture and Agri-Food Sector as a Share of Sector GDP by Province
2009-10



Source: AAFC.
Note: 2009-10 figures are estimates.

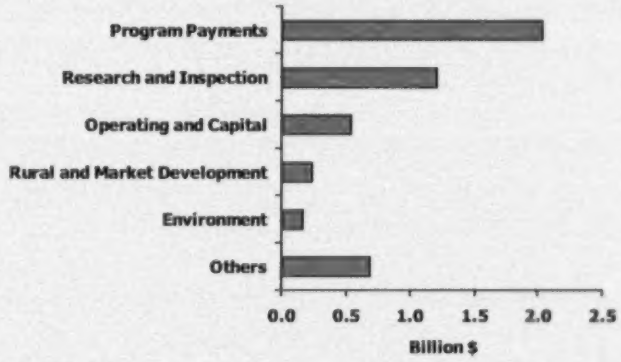
Program payments make up the largest portion of federal and provincial government support

- **In the 2009-10 fiscal year, program payments are estimated to account for the largest share of federal government expenditures in support of the agriculture and agri-food sector in Canada.**

  Program payments will account for 41% of total federal government expenditures to the sector in the 2009-10 fiscal year.

  Research and inspection expenditures are the second most important category of government expenditures, estimated to account for 25% of the total in 2009-10.

Chart D1.5
Federal Government Expenditures in Support of the Agriculture and Agri-Food Sector by Major Category 2009-10

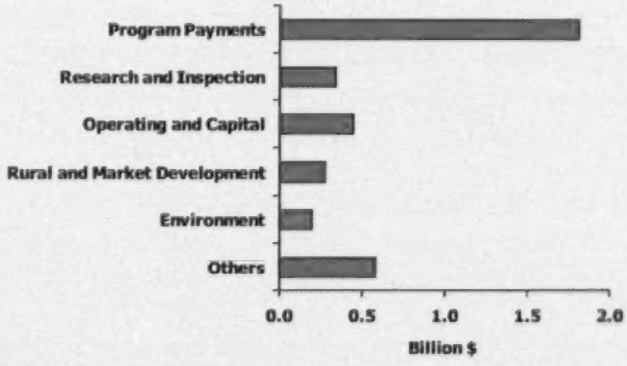


Source: AAFC.
Note: 2009-10 figures are estimates.

- **At the provincial level, program payments are also the most important government expenditure category in support of the agriculture and agri-food sector.**

  Program payments will account for 50% of total provincial government expenditures to the sector in the 2009-10 fiscal year. However, only 9% will have been spent on research and inspection, compared to 25% at the federal level.

Chart D1.6
Provincial Government Expenditures in Support of the Agriculture and Agri-Food Sector by Major Category 2009-10



Source: AAFC.
Note: 2009-10 figures are estimates.

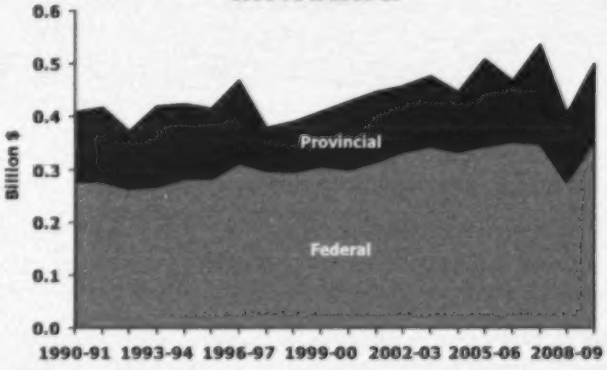
Public research expenditures on agriculture and agri-food are important investments for the future growth of the sector

- **There has been an increasing trend in total publicly-funded research expenditures on the agriculture and agri-food sector over the last decade, with a peak of $536 million in the 2007-08 fiscal year.**

  In Canada, public research expenditures on agriculture and agri-food are predominantly provided by the federal government. On average, federal expenditures have accounted for 70% of total public research expenditures over the past ten years (2000-01 to 2009-10), with the provinces accounting for the remaining 30%.

  Over the past five years, a larger proportion of public R&D funding is being targeted to encourage partnerships with industry and academia and more applied research results.

Chart D1.7
Government Research Expenditures on Agriculture and Agri-Food
1990-91 to 2009-10

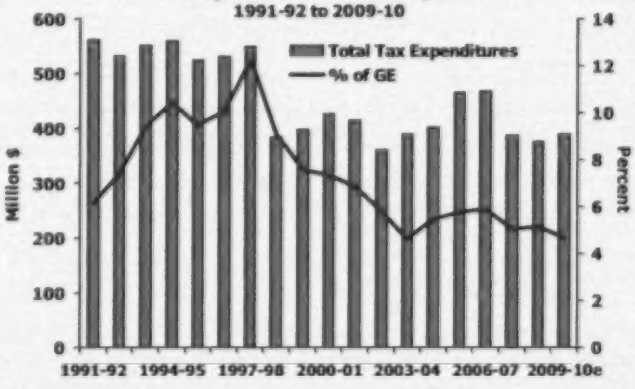


Source: AAFC.
Note: 2009-10 figures are estimates.

- **In addition to tax exemptions and rebates, foregone tax revenues (tax expenditures) are a source of government support to the agriculture and agri-food sector. From 1991-92 to 2009-10, tax expenditures averaged 6.9% of total government support.**

  After a recent decrease, provincial tax exemptions and rebates associated with primary agriculture are expected to increase to $390 million in the 2009-10 fiscal year. Despite this increase, the percentage of tax expenditures to government expenditures has decreased to 4.7%.

Chart D1.8
Support to Farm Producers Through Tax Rebates and Exemptions
1991-92 to 2009-10



Source: AAFC.
Note: 2009-10 figures are estimates.

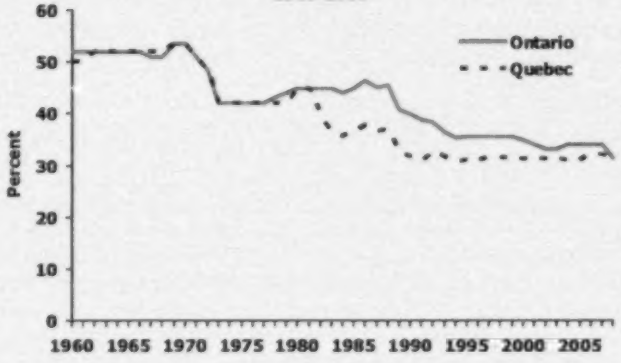
Governments also support the agriculture and agri-food sector through general tax measures and investment in public infrastructure

- **Income tax rates for corporations primarily engaged in manufacturing and processing have declined in all provinces since the mid-1980s.**

  In Ontario and Quebec, the combined federal and provincial corporate tax rates have decreased from around 45% and 36%, respectively, in the mid-1980s to equalize at 31% in both provinces in 2009.

  Changes between 2008 and 2009 in combined tax rates for Ontario and Quebec were due to an increase in the federal general tax rate from 8.5% to 9%. While the provincial corporate tax rate in Ontario stayed the same, the Quebec rate increased from 11.4% to 11.9%.

Chart D1.9
Combined Federal/Provincial Corporate Income Tax Rates for Manufacturers and Processors, Ontario and Quebec 1960-2009



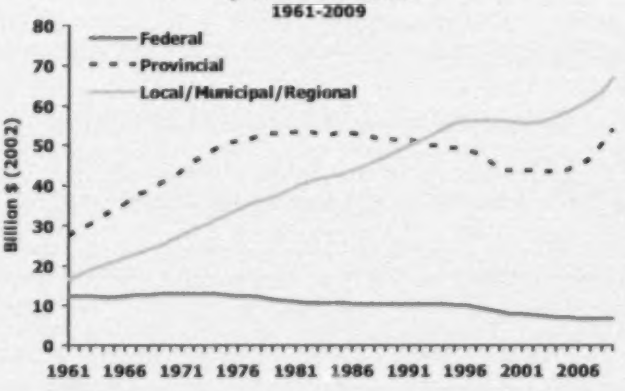
Source: AAFC, Corporate Income Tax Rate Database: Canada and the Provinces 1960-2005 (data revised June 2010).

- **Public investments in infrastructure (roads, bridges, etc.) contribute to the competitiveness and prosperity of the agriculture and agri-food sector.**

  Provincial government engineering infrastructure has increased steadily since 2005, following a decline that started in 1982; the provincial stock is now slightly higher than the previous peak observed in 1981.

  Local, municipal and regional government engineering infrastructure has grown consistently since 2002, increasing by about 5% in 2009. Engineering infrastructure owned by the Government of Canada grew by about 2% in 2009, the first increase observed since 1993.

Chart D1.10
Stock of Public Engineering Infrastructure by Level of Government 1961-2009



Source: Statistics Canada.

Note: Engineering infrastructure includes transportation infrastructure (highways, roads, streets, bridges, rail track, port facilities, etc.) as well as other types such as waterworks, sewers, etc.

SECTION D2

Producer Support Estimate and Agricultural Policies in Other Countries

INTRODUCTION:

Agricultural policies in Canada and other countries have evolved over time. Changes have been made not only by decreasing the level of support, but also by modifying the type of support. Some countries have made significant reforms to their agricultural policies. The Organisation for Economic Co-operation and Development (OECD) indicators are used to present these policy changes.

In recent years, support to Canadian producers as measured by the producer support estimate (PSE) has risen above that of the U.S., but still remains below that of the EU

- **In 2009, the PSE for Canada was 20% of gross farm receipts compared to 24% for the EU and 10% for the U.S.**

  Canadian support to producers increased sharply from 13% in 2008 to 20% in 2009, mainly due to an increase in market price support (MPS), budgetary transfers as well as a decrease in farm receipts. Canada still supports its producers more than the U.S., but less than the EU.

Chart D2.1
PSE in Selected Countries
1986-2009

Source: OECD, Trade and Agriculture Directorate, Producer and Consumer Support Estimates, OECD Database 1986-2009.

- **Over time, Canada has moved towards more decoupled and less distorting forms of support.**

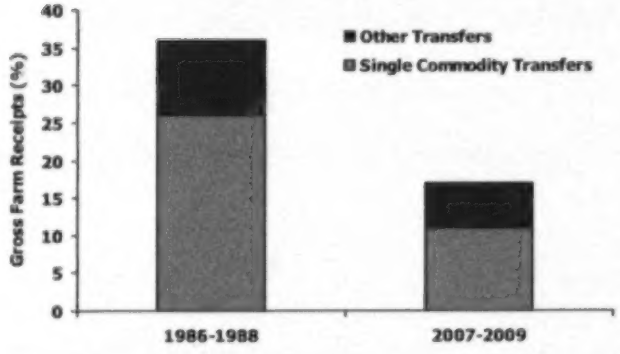
  Support to Canadian agricultural producers dropped from 36% of gross farm receipts in 1986-1988 to 17% in 2007-2009.

  The share of single commodity transfers has decreased in favour of more decoupled and less distorting forms of support. In 2007-2009, single commodity transfers represented 65% of the total PSE compared to 72% in 1986-1988.

  Nevertheless, single commodity transfers continue to account for more than half of producers' support in Canada, close to the OECD average of 53%.

  In 2007-2009, the dairy sector received the highest share of single commodity transfers with 53% of the total.

Chart D2.2
Composition of Support to Producers in Canada
1986-1988 and 2007-2009



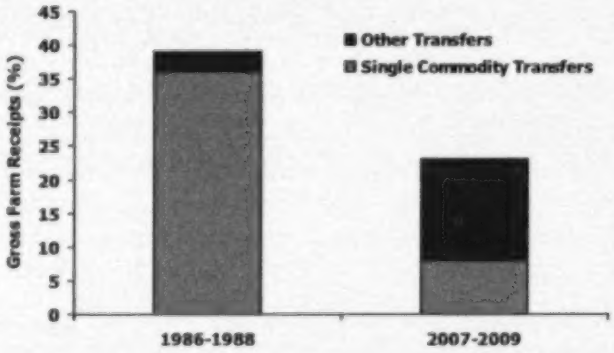
Source: OECD, Agriculture Policies in OECD Countries: At a Glance, 2010.

Policy directions in other countries have moved towards reduced direct support in favour of more general support

- **Between 1986-1988 and 2007-2009, the EU reduced its support to agricultural producers from 39% to 23% of gross farm receipts.**

  In addition, single commodity transfers have decreased substantially in favour of more decoupled and less distorting forms of support. These transfers represent 34% of the total PSE in 2007-2009, compared to 93% in 1986-1988. Single commodity transfers account for less than half of producers' support in the EU. In 2007-2009, the beef and veal sector received the highest share of single commodity transfers at 29% of the total.

Chart D2.3
Composition of Support to Producers in the EU
1986-1988 and 2007-2009

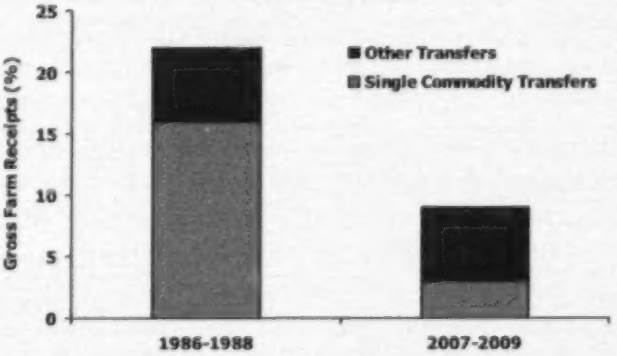


Source: OECD, Agriculture Policies in OECD Countries: At a Glance, 2010.

- **Between 1986-1988 and 2007-2009, U.S. support to agricultural producers decreased from 22% to 9% of gross farm receipts.**

  In addition, single commodity transfers have decreased substantially in favour of more decoupled and less distorting forms of support. They represented 31% of the total PSE in 2007-2009, compared to 71% in 1986-1988. In 2007-2009, the dairy sector received the highest share of single commodity transfers at 44% of the total.

Chart D2.4
Composition of Support to Producers in the U.S.
1986-1988 and 2007-2009



Source: OECD, Agriculture Policies in OECD Countries: At a Glance, 2010.

Acronyms / Initialisms

A

AAFC	Agriculture and Agri-Food Canada
AIMS	Alberta Agriculture Input Monitoring System
APF	Agricultural Policy Framework

B

BICO	Bulk, Intermediate, and Consumer-Oriented
BF	Business Focussed
BMP	Beneficial Management Practice
BRIC	Brazil, Russia, India and China
BSE	Bovine Spongiform Encephalopathy

C

CAP	Common Agricultural Policy
CANSIM	Canadian Socioeconomic Information Management System
CFIA	Canadian Food Inspection Agency
CIBC	Canadian Imperial Bank of Commerce
COOL	Country of Origin Labelling
CPG	Consumer Packaged Goods
CPI	Consumer Price Index
CR4	Concentration Ratio
CRAWUM	Canadian Regional Agricultural Water Use Model

E

EFP	Environmental Farm Plan
EU	European Union

F

FAO	Food and Agriculture Organization of the United Nations
FAOSTAT	Food and Agriculture Organization of the United Nations Statistical Database
FDI	Foreign Direct Investment

G

GE	Government Expenditures
GDP	Gross Domestic Product
GHG	Greenhouse Gas

H

HABA	Health and Beauty Aids

L

LAD	Longitudinal Administrative Database
LCBO	Liquor Control Board of Ontario

M

MPS	Market Price Support

N

NAFTA	North American Free Trade Agreement
NAICS	North American Industrial Classification System

O

OECD	Organisation for Economic Co-operation and Development

P

PSE	Producer Support Estimate

R

R&D	Research and Development
ROW	Rest of the World

S

SAQ	Société des alcools du Québec
SPG	Saskatchewan Pulse Growers
STAN	STructural ANalysis

T

TFP	Total Factor Productivity

U

UK	United Kingdom
US	United States
USDA	United States Department of Agriculture
USDA ERS	United States Department of Agriculture Economic Research Service

W

WTO	World Trade Organization

GLOSSARY

The Canadian Agriculture and Agri-Food System's Components

Agriculture and Agri-Food Sector
The agriculture and agri-food sector is composed of all industries whose primary role is to produce food and agricultural products. It encompasses both primary agriculture and food and beverage processors.

Canadian Agriculture and Agri-Food System
The Canadian agriculture and agri-food system is a value chain of industries focussed on producing agricultural and food products. It includes agricultural input and service suppliers, primary agriculture, food, beverage and tobacco processors, food retailers/wholesalers, and foodservice establishments.

Unless otherwise noted, component stages of the agriculture and agri-food system are defined according to the North American Industrial Classification System (NAICS). A detailed listing of included industries for each component stage of the system is provided below.

Primary Agriculture
Primary agriculture is composed of the following industries as defined by NAICS:

At the 4-digit level

- 1111 Oilseed and Grain Farming
- 1112 Vegetable and Melon Farming
- 1113 Fruit and Tree Nut Farming
- 1114 Greenhouse, Nursery and Floriculture Production
- 1119 Other Crop Farming
- 1121 Cattle Ranching and Farming
- 1122 Hog and Pig Farming
- 1123 Poultry and Egg Production
- 1124 Sheep and Goat Farming
- 1125 Animal Aquaculture
- 1129 Other Animal Production

Food and Beverage Processing
Food and beverage processing is composed of the following industries as defined by NAICS:

At the 3-digit level

- 311 Food Manufacturing
- 312 Beverage and Tobacco Product Manufacturing

At the 4-digit level

- 3111 Animal Food Manufacturing
- 3112 Grain and Oilseed Milling
- 3113 Sugar and Confectionery Product Manufacturing
- 3114 Fruit and Vegetable Preserving and Specialty Food Manufacturing
- 3115 Dairy Product Manufacturing
- 3116 Meat Product Manufacturing
- 3117 Seafood Product Preparation and Packaging

3118 Bakeries and Tortilla Manufacturing
3119 Other Food Manufacturing
3121 Beverage Manufacturing

Agricultural Input & Service Suppliers
Agricultural input and service suppliers are composed of the following industries as defined by NAICS:

At the 4-digit level
1151 Support Activities for Crop Production
1152 Support Activities for Animal Production
3253 Pesticide, Fertilizer and Other Agricultural Chemical Manufacturing
4171 Farm, Lawn and Garden Machinery and Equipment Wholesaler-Distributors
4183 Agricultural Supplies Wholesaler-Distributors

At the 5-digit level
33311 Agricultural Implement Manufacturing
41911 Farm Product Agents and Brokers
41913 Food, Beverage and Tobacco Agents and Brokers
44422 Nursery and Garden Centres
49312 Refrigerated Warehousing and Storage
49313 Farm Product Warehousing and Storage

Food Retailers/Wholesalers
Food retailers/wholesalers are composed of the following industries as defined by NAICS:

At the 3-digit level
411 Farm Product Wholesaler-Distributors
413 Food, Beverage and Tobacco Wholesaler-Distributors
445 Food and Beverage Stores

Foodservice
Foodservice is composed of the following industries as defined by NAICS:

At the 3-digit level
722 Food Services and Drinking Places

At the 4-digit level
4542 Vending Machine Operators

Food Distribution Sector
The food distribution sector is composed of all industries whose primary role is to directly provide and service the final consumer with food and agricultural products. It encompasses food retailers/wholesalers and foodservice establishments.

Commercial Foodservice
Commercial foodservice includes full-service restaurants, limited-service restaurants, social and contract caterers and taverns.

Full-Service Restaurants include licensed and unlicensed fine dining restaurants, family restaurants and restaurant bars.

Limited-Service Restaurants include cafeterias, fast-food restaurants, food courts, and take-out and delivery establishments.

Social Caterers provide foodservice for special events.

Contract Caterers supply foodservice to airlines, railways, institutions and recreational facilities.

Taverns are establishments primarily engaged in serving alcoholic beverages for immediate consumption, such as pubs, cocktail lounges and nightclubs.

Food-Only Processors
Food-only processors refers to manufacturers of food, where food is defined in the narrowest sense (i.e., excludes beverage and tobacco products).

Non-Food Processors
Non-food processors encompasses all industrial uses of farm products other than food or animal feed consumption. It includes bioproduct manufacturers as well as the more traditional non-food industries, such as leather tanneries and textile mills.

Other and Non-Commercial Foodservice
Other foodservice includes accommodation, institutional, retail and other foodservice.

Accommodation Foodservice is foodservice offered by hotels, motels and resorts.

Institutional Foodservice is foodservice in hospitals, residential care facilities, schools, prisons, factories and offices.

Retail Foodservice is foodservice operated by department stores and convenience stores.

Other Foodservice includes vending machines, movie theatres, stadiums and other seasonal or entertainment operations.

Consumers

Total Current Consumption
Shows the expenses incurred for food, shelter, household operations, household furnishings and equipment, clothing, transportation, health care, personal care, recreation, reading materials, education, tobacco products and alcoholic beverages, games of chance, and a miscellaneous group of items.

Personal Expenditure on Consumer Goods and Services
Household spending on new consumer goods and on consumer services, plus any mark-up on used goods.

Classification of Food Purchases

Food Purchased from Stores
Food purchased from stores includes supermarkets, food specialty stores (butcher shops, fresh produce stores, bakeries, fish markets, delicatessens, health food stores, markets or stands, and direct purchases from producers and frozen food suppliers, outdoor farmers' markets and stands, and all other non-service establishments), convenience stores, and other (any other type of store that sells food items, such as department stores, club-type stores, drug stores, etc.).

Food Purchased from Restaurants
Food purchased from restaurants includes table-service restaurants, fast-food restaurants, cafeterias and other (refreshment stands, snack bars, vending machines, chip wagons and caterers). They are usually found at supermarkets, theatres, exhibitions, sports events, parks, etc.

Farm Definitions

Agricultural Co-operative (Farm Co-op)
A legal business entity owned and democratically controlled equally by its members, where the members have a close association with the enterprise as producers or consumers of its products or services. Agricultural co-operatives can be divided into two broad categories: agricultural service co-operatives, which provide various services or inputs to their individual farming members, and agricultural production co-operatives, where production resources (land, buildings and machinery) are pooled and members farm jointly.

Census Farm
An agricultural operation that has the intention of producing at least one of the following products: crops (field crops, tree fruits and nuts, berries or grapes, vegetables, seed); livestock (cattle, pigs, sheep, horses, exotic birds, etc.), animal products (milk or cream, eggs, wool, fur, meat), or other agricultural products (greenhouse or nursery products, Christmas trees, mushrooms, sod, honey, maple syrup products).

Communal Farms
This includes both co-operatives and other communal operations such as Hutterite colonies.

Incorporated Farm
A legal business entity separate from the persons who own, manage or operate the business. The business owners or shareholders are not personally liable for any of the debts of the company, other than the value of their investments in the company due to the legal independence of the business.

Non-family Farms
Farms organized as non-family corporations, co-operatives or other communal operations. It also includes farms held in estates or trusts.

Partnership
A type of business entity in which the business partners share with each other the profits or losses of the business, and where there is no legal distinction between the owners and the business. All partners manage the business and are personally liable for its debts except in the case of a limited partnership, where certain partners may relinquish their ability to manage the business in exchange for limited liability in the partnership's debts.

Sole Proprietorship
A type of business entity, which is owned and run by one individual and where there is no legal distinction between the owner and the business. It is a sole proprietorship in the sense that the owner has no partners.

Unincorporated Farms
Farm businesses where there is no legal distinction between the owners and the business, which include sole proprietorships and partnerships.

Farm Income Definitions

Average Family Income
Average family income is that income level derived by dividing total family income by the number of families.

Capital Cost Allowance
Capital cost allowance refers to the amount deducted for depreciable property for tax purposes.

Debt to Asset Ratio
Debt to asset ratio at the farm level is total debt divided by total assets.

Debt to Equity Ratio
Debt to equity ratio at the industry level is total debt divided by total equity.

Direct Payments
Direct payments include the amounts paid under government agricultural programs and agricultural programs funded by the private sector. These are insurance programs funded totally by premiums paid by producers. Only those payments related to current agricultural production and paid directly to individuals involved in agricultural production are included.

Farm Cash Receipts
include revenues from the sale of agricultural commodities, program payments from government agencies, and payments from private crop and livestock insurance programs. Receipts are recorded in the calendar year (Jan.-Dec.) when the money is paid (cash basis) to farmers.

Farm Expenses
Farm expenses are estimates of farm operating expenses and represent business costs incurred by farm operators for goods and services used in the production of agricultural commodities. All expense information is on a calendar year basis. If direct rebates are paid to farmers to reduce the cost of particular inputs, then the net expense estimates are used in the preparation of net income, although both gross and net expenses may be displayed. As the objective is to produce provincial estimates of net income, flows from one farm to another are excluded from the estimates. The province can be viewed as one large farm.

Farm Family Income
Farm family income is the sum of the total income of the operator and his/her family members. It includes income from both farm and non-farm sources.

Farm Net Worth
Farm net worth is measured as the total assets of the farm evaluated at current market value less total liabilities.

Market Receipts
Market receipts refers to cash income from the sale of agricultural commodities, but excludes direct program payments to producers.

Median Family Income
Median family income is that level of family income where there are an equal number of families with income below that level as there are above it.

Net Cash Income
Net cash income measures farm business cash flow (farm cash receipts minus operating expenses) generated from the production of agricultural goods. Net cash income represents the amount of money available for debt repayment, investment or withdrawal by the owner.

Net Operating Income
Net operating income is a term used at the farm level, and it is the difference between gross farm revenues and total farm cash expenses.

Non-Farm Employment Income
Employment income which originates from sources other than the farm operation (such as gross wages and salaries) and net self-employment income (from business, professional, commission and fishing) not related to the farm operation.

Off-Farm Income
The term off-farm income is a bit misleading in that it includes wages and salaries paid to family members for work done on an unincorporated farm.

Other Non-Farm Income
Investment income (such as interest, taxable capital gains, dividends) which originates from sources other than the farm operation, pensions, and other income from government programs for families or individuals and other income not from the farm operation.

Profit Margin Ratio
Profit margin ratio at the industry level is calculated as operating profits divided by total operating revenues. Operating profit is the net result of the principal business activities of a firm. It is calculated before taking into account interest expense, investment income, non-recurring losses from the write-down of assets, gains or losses realized on the disposal of assets, and income tax expense. This ratio indicates management's ability to generate earnings from the principal business activities of a firm.

Rate of Return on Long-Term Capital
The rate of return on long-term capital is calculated as operating income (without deducting either taxes or interest paid) divided by long-term capital, where long-term capital is taken to be the sum of shareholders' equity and long-term debt.

Realized Net Farm Income
Realized net farm income is calculated as realized net market income plus government program payments.

Realized Net Market Income
Realized net market income is calculated as farm market receipts plus income-in-kind less operating expenses and depreciation.

Return on Assets
The rate of return on assets at the farm level is calculated as net operating income plus interest expense minus capital cost allowance divided by the total value of assets at cost. In the case of dairy and poultry farms, the allowance on eligible capital property for quota was also deducted.

Return on Equity
The rate of return on equity at the farm level is calculated as net operating income minus capital cost allowance divided by net worth at cost. In the case of dairy and poultry farms, the allowance on eligible capital property for quota was also deducted.

Return on Equity Ratio
Return on equity ratio at the industry level is calculated as after-tax profit divided by total equity x 100. This ratio measures the level of return to the owners (investors) and it represents their measure of profitability. The earnings figure is the after-tax profit, including a deduction for interest expense (payments to lenders). It is the net profit available to the owners (investors). The ratio indicates how many cents are returned to every dollar invested by the owners.

Trade Categories

Agriculture and Agri-Food Exports
Agriculture and agri-food exports include the export of agriculture commodities, food (excluding fish and fish products), non-alcoholic beverages (including bottled water), alcoholic beverages, tobacco products, and floriculture and nursery.

Agriculture and Agri-Food Imports
Agriculture and agri-food imports include the import of agriculture commodities, food (excluding fish and fish products), non-alcoholic beverages (including bottled water), alcoholic beverages, tobacco products and floriculture and nursery.

Intra-Regional Trade
Trade between two regions in a given location. For example trade between Canadian provinces or the European Union member countries.

Trade Classification
Trade statistics for the agriculture and agri-food system are categorized according to the BICO classification system which separates products into three different groupings: bulk, intermediate, and consumer-oriented.

Bulk (B)
Products that have received little or no processing, such as, wheat, feedgrains and oilseeds.

Intermediate (I)
Products that have received some processing, but generally are not yet ready for final consumption. Examples include wheat flour, vegetable oils and slaughter animals.

Consumer-Oriented (CO)
Products that require little or no additional processing and are basically ready for human consumption. Examples include dairy products, eggs, beef, fresh fruits, and floriculture, as well as canned soups, frozen meals, baby foods, etc.

Value-Added Trade
Value-added exports/imports include exports/imports of all intermediate and consumer-oriented goods.

Government Support Categories

Government Expenditures
Government spending (at all levels) on agriculture and food processing in a year, both direct and indirect, to individuals, agencies or associations.

Major Categories of Expenditures

Development, Trade and Environment-Related Program Expenditures
Include administration and capital expenditures incurred by the government to work on regional development, marketing and trade, and environmental activities as well as grants and contributions issued by the government for work on these activities.

Operating and Capital Expenditures
Include government expenditures on general administration and management, and on policy information and statistical services.

Other Expenditures
Include government expenditures on food aid and international assistance, extension, and education as well as social program payments and tax expenditures.

Program Payment Expenditures
Include payments for income support and stabilization programs, ad hoc and cost reduction programs, agri-insurance and financing assistance programs.

Research and Inspection Expenditures
Include administration and capital expenditures incurred by the government to perform research and inspection activities, as well as grants and contributions issued by the government for work on these activities.

Storage and Freight Assistance Expenditures
Program payments for storage and freight.

Public Infrastructure
The quantity of physical capital owned by the municipal, provincial and federal governments of Canada. This includes: buildings such as schools, hospitals, libraries and post offices; engineering structures (see below), and machinery such as ambulances, buses, rapid transit cars and snow removal vehicles.

Engineering Infrastructure
This is comprised of engineering structures owned by the municipal, provincial and federal governments of Canada. It includes: highways, roads and streets, bridges, rail track, port facilities, waterworks, sewers and sewage treatment plants.

Government Support Measures

Market Price Support (MPS)
Transfers to agricultural producers from policy measures that create a gap between domestic market prices and border prices of a specific agricultural commodity.

Producer Support Estimate (PSE)
A yearly measure of policy support to farm producers. It is the sum of market price support and budgetary payments to producers, expressed as a percentage of the gross farm receipts.

> **Gross Farm Receipts**
> The value of commodity production plus the direct transfers received by producers in the current year.

Single Commodity Transfers
Transfers to agricultural producers from policy linked to the production of a single commodity, such that the producer must produce the designated commodity in order to receive the transfer.

Economic and Statistical Terminology

Advanced Technology
Advanced technology refers to a new technology that performs a new function or improves some function significantly better than commonly used technologies. Examples include biotechnology, nanotechnology, etc.

Benefit/Cost Ratio
The benefit/cost ratio is a ratio where the numerator consists of all direct benefits and the denominator consists of all direct costs. In other words, the benefit/cost ratio is expressed in terms of favourable monetary consequences to project beneficiaries, offset by any negative benefits.

Capital Stock
Fixed capital is comprised of buildings, engineering structures and machinery and equipment. Total investment in fixed capital is made up of purchases needed to offset depreciation (replacement needs) and purchases to expand the capital stock. When replacement needs exceed investment, the capital stock falls, since the existing stock is not being maintained. When investment exceeds replacement needs, the stock increases.

Chained Dollars
A measure to express real volumes of production or expenditure by removing the distorting effects of price changes over time.

Check-offs
Producer association check-off schemes are common sources of funding for R&D innovation, promotion and development of agriculture commodities. These schemes usually involve an annual assessment of marketings or sales, where the revenue is pooled by the grower organization and a percentage share or fixed amount levy is collected for these purposes.

Concentration Ratio (CR4)
Concentration ratio is a measure of an industry's concentration level and expresses sales of a set number of the top firms in the industry as a percentage of total industry sales. CR4 is the acronym for the concentration ratio of the top four firms in the industry.

Constant Prices
Constant prices refers to a value from which the overall effect of a general price inflation has been removed.

Crop Yield
Crop yield is a measure of the amount of a crop harvested per unit of land area.

Foreign Direct Investment (FDI)
FDI refers to investment by non-residents in an enterprise where the non-residents own 10 percent or more of the ordinary shares or voting power in incorporated enterprises or the equivalent in unincorporated enterprises.

Gross Domestic Product (GDP)
The GDP for a country is the total unduplicated value of the goods and services produced in that country during a given period.

Internal Rate of Return (IRR)
The IRR, in percentage, is based on the producer benefit/cost ratio. The benefits and the costs are discounted so that the present worth of all costs equals the present worth of all benefits. Various interest rates can be assumed.

Labour Productivity
Labour productivity is a measure of an industry's output per hour of labour worked.

Multifactor Productivity
Multifactor productivity measures the efficiency in use of all inputs. Its growth is calculated as the rate of growth of output less the rate of growth of all inputs.

Net Value-Added
Net value-added measures agriculture's contribution to the national economy's production of goods and services created in a particular year. It is derived by calculating the total value of agricultural sector production, including program payments, and subtracting the related costs of production (expenses on inputs, business taxes and depreciation). Net value-added is distributed to the various factors of production, including rent to non-operator landlords, interest to lenders, wages and profits.

Quintiles
Quintiles are ranking households in ascending order of total household income and organized into five groups of equal numbers.

Quota Value
The value of a specified quantity of a supply-managed agricultural commodity, such as those in the dairy or poultry industries, which a producer has an obligation to supply.

Rural Area
All territory outside urban areas is considered rural. Taken together, urban and rural areas cover all of Canada.

Technology
Technology is broadly defined to include the technical means and know-how required to produce a product or service. It takes the form of equipment, materials, processes, blueprints and knowledge.

Total Factor Productivity (TFP)
TFP is measured as output divided by all inputs (i.e., capital, labour, etc.).

Value-Added Production
Value-added production refers to products that have undergone some processing.

Urban Area
Urban area includes all large metropolitan areas (even though they do contain some rural areas), most small metropolitan areas (also called census agglomerations). In some cases, where a census agglomeration contains a large rural population, only the urban portion is considered urban. As well, urban areas based on the census definition: "urban areas have minimum population concentrations of 1,000 and a population density of at least 400 per square kilometre, based on the previous census population counts." Taken together, urban and rural areas cover all of Canada.

Environmental Terminology

Arable Land
FAO defines arable land as land under temporary crops, meadow and pasture.

Beneficial Management Practices
Beneficial management practices are methods or techniques found to be the most effective and practical means in achieving an objective (such as preventing or minimizing pollution) while making the optimum use of the firm's resources.

Biomass
The term biomass refers to materials sourced from forestry, agricultural (plant, livestock products or by-products) marine, and aquaculture materials, as well as from industrial and municipal wastes.

Bioproducts
Bioproducts are products (other than food, feed, or medicine) made from renewable biological inputs (often referred to as biomass). The term includes new bio-based products as well as those traditional products which have been adapted to replace non-renewable inputs. Conventionally-made industrial products (such as lumber) are excluded.

Carbon Sequestration
Carbon sequestration is a biochemical process by which atmospheric carbon is absorbed by living organisms, including trees, soil micro-organisms, and crops, and involving the storage of carbon in soils, with the potential to reduce atmospheric carbon dioxide levels.

Conservation Tillage
Conservation tillage is a tillage system that creates a suitable soil environment for growing a crop and that conserves soil, water and energy resources mainly through the reduction in the intensity of tillage, and retention of plant residues.

Conventional Tillage
Conventional tillage is a tillage system using cultivation as the major means of seedbed preparation and weed control.

Greenhouse Gases (GHG)
Greenhouse gases refer to carbon dioxide, nitrous oxide, methane, ozone and chloro-fluorocarbons occurring naturally and resulting from human (production and consumption) activities, and contributing to the greenhouse effect (global warming).

Low Carbon Pathway
Low carbon pathway is defined as a new economic, technological and social system of production and consumption to conserve energy and reduce greenhouse gas emissions compared with the traditional economic system, while maintaining economic and social development.

No-tillage Farming
No-tillage (also known as no-till or zero tillage) is a practice in which the crop is sown directly into soil and not tilled from the harvest of the previous crop. Weed control is achieved by the use of herbicides, and stubble is retained for erosion control. It is typically practised in arable areas where fallowing is important.

Permanent Cropland
FAO defines permanent cropland as land cultivated with crops that occupy the land for long periods and need not be replanted after each harvest (e.g., cocoa, coffee, and rubber). For Canada, permanent cropland is equal to area on farms that is covered with forest and woodland.

Riparian Buffer Strip
Riparian buffer strip is a narrow strip of land along a watercourse designed to reduce erosion, intercept pollutants, provide habitat for wildlife and address other environmental concerns.

Soil Salinization
Salinization refers to the increase in salt concentration in an environmental medium, notably soil.

Summerfallow
Summerfallow involves keeping normally cultivated land free of vegetation throughout one growing season by cultivating and/or applying chemicals to destroy weeds, insects and soil-borne diseases and allow a buildup of soil moisture reserves for the next crop year.

Windbreaks or Shelterbelts
Windbreaks or shelterbelts are rows of natural or planted trees or hedges along field edges that stop prevailing winds from eroding the soil. Used more frequently in western Canada, where farmland is more susceptible to wind action and where trapping snow for moisture is important.

Units of Measure

CO_2 eq	Carbon dioxide
CO_2 eq (kg/kg of lw)	Carbon dioxide equivalent divided by kilograms of live animal weight
cwt	Hundredweight tonnes
cwt lw	Hundredweight tonnes live weight
kt	Kilo tonnes
kt dw	Kilo tonnes dressed weight
kt lw	Kilo tonnes live weight
Mt	Mega tonnes
mt	Metric tonnes

Data Sources and References

Section A – Special Feature

Section A1: Young Farmer Enterprises

Chart	Source
A1.1-A1.16	Statistics Canada, Farm Financial Survey, 2008 Reference Year

Section B – The Agriculture and Agri-Food System and the Canadian Economy

Section B1: GDP and Employment

Chart	Source
B1.1 -B1.2	Statistics Canada, CANSIM Table 379-0027 - Gross Domestic Product (GDP) at basic prices by North American Industry Classification System (NAICS); CANSIM Table 301-0003 - Annual Survey of Manufactures; CANSIM Table 301-0006 - Principal statistics for manufacturing industries, by North American Industry Classification System (NAICS), annual
B1.3-B1.4	Statistics Canada, Labour Force Survey, special tabulation for AAFC
B1.5-B1.6	Statistics Canada, CANSIM Table 379-0027 - Gross Domestic Product (GDP) at basic prices, by North American Industry Classification System (NAICS); CANSIM Table 379-0025 - Gross Domestic Product (GDP) at basic prices, by North American Industry Classification System (NAICS) and province, annual Provincial GDP and special tabulations for AAFC
B1.7-B1.8	Statistics Canada, Labour Force Survey, special tabulation for AAFC

Section B2: International Trade

Chart	Source
B2.1-B2.2	Global Trade Atlas
B2.3-B2.20	Statistics Canada via AAFC's Trade Data Retrieval System

Section B3: R&D Investments in Primary Agriculture and Food Processing

Chart	Source
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B3.4	OECD, "Agricultural Policies in OECD Countries: At A Glance, 2010"
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B3.11	Statistics Canada, Cat. No. 88-001-X Science Statistics -vol.33.No.4. "Industrial Research and Development, 2005-2009", September 2008 Edition. 1980 to 1994, special tabulation
B3.12	Statistics Canada, Survey of Advanced Technology, 2007. Table 22a1
B3.13	OECD, Structural Analysis (STAN) Database Indicators, 2009

Section B4: Productivity Growth

Chart	Source
B4.1-B4.8	AAFC's Canadian Primary Agriculture Productivity Database, 1961-2005
	United States Department of Agriculture, Economic Research Service http://www.ers.usda.gov/data/agproductivity/alltables.xls
B4.9	Statistics Canada, CANSIM Table 383-0022 - Multifactor productivity, gross output, value-added, capital, labour and intermediate inputs at a detailed industry level, by North American Industry Classification System (NAICS), annually
	United States Department of Labor, Bureau of Labor Statistics, 1987-2006 Aggregate Manufacturing and Manufacturing Industries (KLEMS) Multifactor Productivity Tables
B4.10	Statistics Canada, CANSIM Table 383-0022 - Multifactor productivity, gross output, value-added, capital, labour and intermediate inputs at a detailed industry level, by North American Industry Classification System (NAICS), annually
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Section C – Components of the Agriculture and Agri-Food System

Section C1: Consumers

Chart	Source
C1.1-C1.2	Statistics Canada, CANSIM Table 380-0024 - Personal expenditure on goods and services, annual 2009
C1.3	Statistics Canada, CANSIM Table 051-0001 - Population of Canada all ages, CANSIM Table 380-0019: Disposable Income (annual), and CANSIM Table 380-0056: GDP Deflator (Implicit Chain Price Index 2002 = 100) and AAFC calculations
C1.4	Statistics Canada, CANSIM Table 380-0024 - Personal expenditure on goods and services, annual 2009, for food purchased from stores and special tabulation for food purchased from restaurants and AAFC calculations
C1.5	Statistics Canada, CANSIM Table 380-0024 - Personal expenditure on goods and services, annual 2009 and CANSIM Table 051-0001 Estimates of population, by age group and sex for July 1, Canada, provinces and territories, annual (persons) and AAFC calculations
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C1.8-C1.9	Statistics Canada, CANSIM Table 326-0021 - Consumer price index (CPI), 2005 basket, annual (2002=100)
C1.10-C1.11	Statistics Canada, CANSIM Table 002-0019 - Food Available by major groups in Canada
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Section C2: Food Distribution (Retail/Wholesale and Foodservice)

Chart	Source
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C2.4	Statistics Canada, CANSIM Table 187-0002 - Quarterly financial statistics for enterprises; Food and beverage retail trade - special tabulation; and All retail trade
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C2.6	Nielsen MarketTrack, National All Channels, 52 weeks to March 13, 21010
C2.7	Statistics Canada, CANSIM Table 355-0006 - Number of units (annual average value - from monthly unadj. data); sales (total annual from monthly unadj.)
C2.8	Canadian Restaurant and Foodservices Association (CRFA), Quarterly InfoStats 2003, special tabulation for 2004-2009
C2.9	CRFA, Foodservice Facts 2010; from CREST/NPD Group and ReCount
C2.10	Canadian Restaurant and Foodservices Association, Foodservice Facts 2010
C2.11	Statistics Canada, CANSIM Table 180-0003 - Financial and taxation statistics for enterprises, by North American Industry Classification System (NAICS), annual
C2.12	CRFA, 2009 Institutional Foodservice Market Report

Section C3: Food and Beverage Processing

Chart	Source
C3.1	Statistics Canada Input/Output Model and AAFC calculations
C3.2	Statistics Canada, CANSIM Table 379-0027 - Gross Domestic Product (GDP) at basic prices by North American Industry Classification System (NAICS), annual
C3.3	Statistics Canada, CANSIM Table 281-0024 - Employment (SEPH), unadjusted for seasonal variation, by type of employee for selected industries classified using the North American Industry Classification System (NAICS), annual (persons)
C3.4	Statistics Canada, CANSIM Table 304-0014 - Manufacturers' shipments, inventories, orders and inventory to shipment ratios, by North American Industry Classification System (NAICS), Canada, monthly
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C3.6-C3.7	Statistics Canada, Annual Survey of Manufactures and Logging, special tabulations
C3.8-C3.10	Statistics Canada via AAFC's Trade Data Retrieval System
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C3.11-C3.13	Statistics Canada via AAFC's Trade Data Retrieval System
C3.14	Statistics Canada, CANSIM Table 301-0006 - Principal statistics for manufacturing industries, by North American Industry Classification System (NAICS), annual
C3.15	Statistics Canada, CANSIM Table 383-0022 - Multifactor productivity, gross output, value-added, capital, labour and intermediate inputs at a detailed industry level, by North American Industry Classification System (NAICS), annual (index, 2002=100)
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Section C4: Primary Agriculture

Chart	Source
C4.1	Statistics Canada Input/Output Model and AAFC calculations
C4.2	Statistics Canada, Census of Agriculture, various years
C4.3	Statistics Canada, 2006 Census of Agriculture
C4.4	AAFC
C4.5-C4.6	Statistics Canada, CANSIM Table 002-0001 - Farm Cash Receipts
C4.7	Canadian Wheat Board and University of Guelph, Ridgetown College

C4.8	Canfax annual report
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	AAFC's Red Meat Market Information
C4.9-C4.10	Statistics Canada, CANSIM Table 002-0001 - Farm Cash Receipts
C4.11	Statistics Canada, CANSIM Table 002-0009 - Net farm income, annual (dollars)
C4.12	Statistics Canada, CANSIM Table 002-0001 - Farm cash receipts, annual (dollars), Table 002-0002 - Farm cash receipts, quarterly (dollars), Table 002-0003 - Value per acre of farm land and buildings, annual (dollars)
C4.13	Statistics Canada, CANSIM Table 002-0004 - Agriculture value added account, annual (dollars)
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C4.15-C4.19	Statistics Canada, Taxation Data Program and AAFC calculations
C4.20	Statistics Canada and AAFC, Farm Financial Survey, various years
C4.21	Statsitics Canada, Taxfiler Data Program, Farm Family Income series (unincorporated sector), various years
C4.22-C4.24	Statistics Canada, Corporate Taxfiler Database, various years
C4.25	Statistics Canada, Farm Financial Survey 2007 and AAFC calculations
C4.26-C4.29	Statistics Canada, Catalogue No. 13C0019 - Longitudinal Administrative Databank
C4.30-C4.35	Statistics Canada and AAFC, Farm Financial Survey, various years

Section C5: Inputs to Primary Agriculture

CHART	SOURCE
C5.1	AAFC
C5.2	Statistics Canada, CANSIM Table 002-0005 - Farm operating expenses and depreciation charges, annual (dollars)
C5.3	Statistics Canada, Labour Force Survey
C5.4	Statistics Canada, CANSIM Table 002-0005 - Farm operating expenses and depreciation charges, annual (dollars)
C5.5	Alberta Agriculture and Food, Economics and Competitiveness Division, Statistics and Data Development Unit, Alberta Agricultural Input Monitoring System (AIMS) and the United States Energy Information Administration
C5.6-C5.7	Statistics Canada, Catalogue No. 21-022-XWE - Fertilizer Shipments Survey on behalf of the Canadian Fertilizer Institute
C5.8	Ridgetown College, University of Guleph, Ontario Farm Input Monitoring Project Survey and Alberta Agriculture and Rural Development, Alberta Average Farm Input Price Survey
C5.9	Ridgetown College, University of Guleph, and The Chicago Board of Trade
C5.10	Statistics Canada, Catalogue No. 23-012-XWE - Cattle Statistics, and Canfax - Alberta feeder steers 5-600lbs and AAFC calculations

Section C6: Natural Resource Use and Environmental Impacts

CHART	SOURCE
C6.1	Statistics Canada, 2006 Census of Agriculture
C6.2	Statistics Canada, CANSIM Table 001-0065 - Fertilizer shipments to Canadian agriculture markets, by nutrient content and fertilizer year, annual (metric tonnes) *T*
C6.3	Statistics Canada, 2006 Census of Agriculture and AAFC calculations
C6.4	Statistics Canada, Environment Accounts and Statistics Division, Agricultural Water Use Survey (survey no. 5145) and AAFC calculations
C6.5	Statistics Canada, Census of Agriculture, various years

C6.6	Statistics Canada, 2001 and 2006 Censuses of Agriculture
C6.7	Statistics Canada, Farm Environmental Management Survey, 2006 and AAFC calculations
C6.8	Statistics Canada, Farm Environmental Management Survey, 2001 and 2006 and AAFC calculations
	Canadian Fertilizer Institute
C6.9-C6.10	Environment Canada. (2010). National Inventory Report 1990-2008, Part 1: Greenhouse gas sources and sinks in Canada, Cat. No.: En81-4/2008E-PDF
	Natural Resources Canada, National Energy Database, 1990-2007
C6.11	Environment Canada. (2010). National Inventory Report 1990-2008, Part 1: Greenhouse gas sources and sinks in Canada, Cat. No.: En81-4/2008E-PDF
C6.12	Vergé, X.P.C., J.A. Dyer, R.L. Desjardins, and D.E. Worth. (2008). Long-Term Trends in the Greenhouse Gas Emissions from the Canadian Dairy Industry, Canadian Journal of Soil Science, 88(5), pp. 629-639
	Vergé, X.P.C., J.A. Dyer, R.L. Desjardins, and D.E. Worth. (2009). Greenhouse Gas Emissions from the Canadian Pork Industry, Livestock Science, 121(1), p. 92-101
C6.13	Eilers, W., R. MacKay, L. Graham and A. Lefebvre (eds). (2010). Environmental Sustainability of Canadian Agriculture: Agri-Environmental Indicator, Report Series – Report #3. Agriculture and Agri-Food Canada, Ottawa, Ontario
C6.14	Javorek, S.K. and M.C. Grant. (2010). Wildlife Habitat. Pages 36-43 and Eilers, W., R. MacKay, L. Graham, and A. Lefebvre (eds) (2010). Environmental Sustainability of Canadian Agriculture: Agri-Environmental Indicator Report Series – Report #3. Agriculture and Agri-Food Canada, Ottawa, 235p

Section D – Government and the Agriculture and Agri-Food Sector

Section D1: Government Expenditures

Chart	Source
D1.1-D1.8	AAFC's Farm Income, Financial Conditions and Government Assistance - Databook, Table C.1 (April 2010 update)
D1.9	AAFC's Corporate Income Tax Rate Database: Canada and the Provinces, 1960-2005 via AAFC Online
D1.1 0-D1.12	Statistics Canada, CANSIM Table 031-0002 - Flows and Stocks of Fixed Non-Residential Capital, by North American Industry Classification System (NAICS), annual

Section D2: Producer Support Estimates and Agricultural Policies in Canada and Other Countries

Chart	Source
D2.1	OECD, Trade and Agriculture Directorate, Producer and Consumer Support Estimates, OECD Database 1986-2009
D2.2-D2.4	OECD, Agriculture Policies in OECD Countries: At a Glance 2010